S. HRG. 114–585

THE FUTURE NUCLEAR POSTURE OF THE UNITED STATES

HEARING

BEFORE THE

SUBCOMMITTEE ON STRATEGIC FORCES

OF THE

COMMITTEE ON ARMED SERVICES
UNITED STATES SENATE

ONE HUNDRED FOURTEENTH CONGRESS

SECOND SESSION

JANUARY 27, 2016

Printed for the use of the Committee on Armed Services

Available via the World Wide Web: http://www.fdsys.gov/

U.S. GOVERNMENT PUBLISHING OFFICE
24–800 PDF WASHINGTON : 2017

For sale by the Superintendent of Documents, U.S. Government Publishing Office
Internet: bookstore.gpo.gov Phone: toll free (866) 512–1800; DC area (202) 512–1800
Fax: (202) 512–2104 Mail: Stop IDCC, Washington, DC 20402–0001

COMMITTEE ON ARMED SERVICES

JOHN MCCAIN, Arizona, *Chairman*

JAMES M. INHOFE, Oklahoma	JACK REED, Rhode Island
JEFF SESSIONS, Alabama	BILL NELSON, Florida
ROGER F. WICKER, Mississippi	CLAIRE MCCASKILL, Missouri
KELLY AYOTTE, New Hampshire	JOE MANCHIN III, West Virginia
DEB FISCHER, Nebraska	JEANNE SHAHEEN, New Hampshire
TOM COTTON, Arkansas	KIRSTEN E. GILLIBRAND, New York
MIKE ROUNDS, South Dakota	RICHARD BLUMENTHAL, Connecticut
JONI ERNST, Iowa	JOE DONNELLY, Indiana
THOM TILLIS, North Carolina	MAZIE K. HIRONO, Hawaii
DAN SULLIVAN, Alaska	TIM KAINE, Virginia
MIKE LEE, Utah	ANGUS S. KING, JR., Maine
LINDSEY GRAHAM, South Carolina	MARTIN HEINRICH, New Mexico
TED CRUZ, Texas	

CHRISTIAN D. BROSE, *Staff Director*
ELIZABETH L. KING, *Minority Staff Director*

SUBCOMMITTEE ON STRATEGIC FORCES

JEFF SESSIONS, Alabama, *Chairman*

JAMES M. INHOFE, Oklahoma	JOE DONNELLY, Indiana
DEB FISCHER, Nebraska	BILL NELSON, Florida
MIKE LEE, Utah	JOE MANCHIN III, West Virginia
LINDSEY GRAHAM, South Carolina	ANGUS S. KING, JR., Maine
TED CRUZ, Texas	MARTIN HEINRICH, New Mexico

CONTENTS

JANUARY 27, 2016

THE FUTURE NUCLEAR POSTURE OF THE UNITED STATES

WEDNESDAY, JANUARY 27, 2016

U.S. SENATE,
SUBCOMMITTEE ON STRATEGIC FORCES,
COMMITTEE ON ARMED SERVICES,
Washington, DC.

The subcommittee met, pursuant to notice, at 2:31 p.m. in Room SR–232A, Russell Senate Office Building, Senator Jeff Sessions (chairman of the subcommittee) presiding.

Committee members present: Senators Sessions, Fischer, Donnelly, and King.

Other Senators present: Cotton and Sullivan.

OPENING STATEMENT OF SENATOR JEFF SESSIONS

Senator SESSIONS. The meeting will come to order.

Senator Donnelly is on the way, and I think we'll just proceed with some preliminaries.

I thank our colleagues for coming. And it's an opportunity today to examine the future of America's nuclear force posture with a rock-star panel, I've got to say. These are four individuals who have served different administrations, who have been deeply involved in this issue, have thought about them, written about it, and, I think, will be a real asset to our committee as we go forward.

So, we've asked the witnesses to provide an assessment of the continuities and changes in the U.S. nuclear posture, with an eye toward what we've gotten right and what policies or assumptions have not been borne out by recent events.

As I believe Mr. Miller just noted as we talked about the grimness of this subject, it's—for 60 years, there's a lot that can be said as to how this policy of nuclear deterrence has helped protect the peace.

More important, we've asked for the panel's thoughts on how the current nuclear posture should be changed to address the strategic environment as it may evolve over the next 25 years. In other words, what should be the major considerations and content of any nuclear review to be conducted by the next President?

From my perspective, there have been at least three constants in U.S. nuclear policy across Republican and Democratic administrations over the past quarter century. The first constant has been the enduring necessity for a triad of land, air, and sea-based nuclear forces to deter threats to vital U.S. interests and to assure allies of U.S. security commitments.

Second—and this is often forgotten by anti-nuclear groups—there has been a shared objective to reduce the U.S. nuclear stockpile from Cold War highs to the lowest number of nuclear weapons consistent with maintaining U.S. nuclear deterrence and assurance objectives.

Third constant. Unfortunately, there has been a consistent decline in leadership focus and funding for America's nuclear forces and the nuclear laboratory and production complex, perhaps in the misguided belief that, with the end of the Cold War, nuclear deterrence was no longer a national priority. And I think we've observed that our unilateral reductions have not resulted in world reductions of nuclear weapons, but, in fact, more proliferation.

Congress has demonstrated over the last few years a strong commitment to fund the nuclear modernization plans of the Obama administration. Now, that's a commitment that the President has made, and we need to make sure it goes forward. It's probably a minimum action, but it's—essentially does, I think, where—what we have to do.

Each leg of the nuclear triad is being replaced, hopefully before this Cold War-era force reaches the end of its service life. And a very large sum of money is programmed to refurbish nuclear warheads and bombs that have far outlasted their intended lifetimes and to replace nuclear handling facilities, some of which date back to the dawn of the Nuclear Age. And indeed, however, the sums of money spent on our nuclear warheads and our triad is relatively small in light of the entire defense budget.

So, I thank our committee members from being here.

Senator Cotton, we're glad to have you. You're going to find that you've got four of the truly—true experts on this subject before us today.

Senator COTTON. I do thank you.

Senator SESSIONS. So, we'll proceed with a 5- to 7-minute opening statement by each of our witnesses, in this order:

Dr. John Harvey is a former Deputy Secretary of Defense for Nuclear and Missile Defense Policy in the Clinton administration, and former Principal Deputy to the Assistant to the Secretary of Defense for Nuclear, Chemical, and Biological Weapons in the Obama administration, and former Director of Policy Planning Staff of the NNSA [National Nuclear Security Administration]. He also had contributed valuably to our discussions about improving our laboratories and our modernization.

Dr. Keith Payne, the CEO and President of the National Institute for Public Policy, formerly Deputy Assistant Secretary of Defense in the Bush administration, helped write the 2001 Department of Defense Nuclear Posture Review in the Bush administration, and was a key member of the Perry-Schlesinger Report in, what, 2009, that was—really helped us reach a bipartisan consensus on nuclear posture.

Dr. Brad Roberts is the Director, Center for Global Security Research, Lawrence Livermore National Laboratory, former Deputy Assistant Secretary of Defense for Nuclear and Missile Defense Policy in the Obama administration. I believe you've got your book out now. Is it—″Care for″—″The Case for Nuclear Weapons in the 21st Century." It's an important subject. Thank you for that.

Mr. Frank Miller, the Principal of the Scowcroft Group, former Senior Director for Defense Policy and Arms Control for the National Security Council, 2001 through 2005, and senior civilian defense official responsible for nuclear matters in the Bush and Clinton administrations.

So, we do have a good panel, indeed.

Senator Donnelly, I just did a brief opening statement, and I would yield to you for your opening comments at this time, before we hear from the panel.

STATEMENT OF SENATOR JOE DONNELLY

Senator DONNELLY. Thank you, Mr. Chairman.

I want to thank our witnesses for agreeing to appear today before the committee. Over many years, we've sought your counsel on our Nation's nuclear deterrent. Today is no different.

I also understand a number of you have worked side by side with a prestigious Hoosier who is also my good friend, Jonathan George. So, he sends his best wishes.

At the beginning of every administration, there are a host of pressing national security issues that must be addressed, but, as Secretary Harold Brown once observed, then there is also the question of nuclear weapons. No other issue garners as much debate and thought on their force structure and possible use. And rightly so.

Today, you have the opportunity to once again give this committee advice on a topic that forms the foundation of our national security and that of our allies. This is a time for us to learn and reflect on a topic that is at the very core of our national security debate.

Again, I'd like to thank Senator Sessions for arranging this hearing. I look forward to another productive year of work in this subcommittee, where we have built such a strong bipartisan consensus on our nuclear posture, nonproliferation efforts, and missile defense.

Thank you, Mr. Chairman.

Senator SESSIONS. Thank you.

All right. Dr. Harvey?

STATEMENT OF JOHN R. HARVEY, FORMER PRINCIPAL DEPUTY ASSISTANT SECRETARY OF DEFENSE FOR NUCLEAR, CHEMICAL, AND BIOLOGICAL DEFENSE PROGRAMS

Dr. HARVEY. Chairman Sessions, Ranking Member Donnelly, members of the committee, thanks for the opportunity to testify before you today about the future nuclear posture of the United States.

My statement today reflects almost an entire career working on nuclear deterrence. Most recently, from 2009 to 2013, I was Principal Deputy Assistant Secretary under Ash Carter, then the Under Secretary. I was his go-to person for the 2010 Nuclear Posture Review, and, more generally, for oversight of the Nuclear Stockpile and for programs to modernize delivery platforms and nuclear command and control.

I request that my written statement be entered in the record. It——

Senator SESSIONS. We will make it part of the record.

Dr. HARVEY. Its basic points are as follows:

In recent years, our government has made great progress in advancing a comprehensive strategy to sustain and modernize U.S. nuclear forces. The President has sought significant increases in modernization programs. In very large part, Congress has funded these programs and, as it should, has held the administration accountable for sustained progress. A bipartisan consensus on modernization, although fragile and very narrowly focused, has emerged, and my written statement speaks about how this has come to be.

Job number one now, however, is to preserve this consensus and, if possible, bolster it in the face of two daunting challenges. First, in a decades-long modernization effort, we begin the climb up the bow wave of needed investment that peaks in the late 2020s. Second, and most importantly, is the challenge of sustaining momentum and consensus in the transition over the coming year to the next President. The nature and scope of the 2017 Nuclear Posture Review will be a factor in meeting these challenges. Continued close attention and bipartisan support from Congress will be essential.

In light of the evolving global security environment, the next President will likely direct a review of nuclear posture. Congress has three options to consider in seeking to shape that review. First, it could take no action. That is, leave it up to the direction of the—discretion of the next President. Second, it could direct the next administration to conduct a nuclear review, with specified terms of reference, and deliver a report by a date certain on the way ahead. Third, it could establish a new bipartisan commission to inform the nuclear review—independent commission—to inform the nuclear review of the next President.

In considering options, the three previous NPRs [Nuclear Posture Reviews], those concluded by Clinton in 1994, Bush in 2001, and Obama in 2010, reflect much more continuity than change. All concluded that a triad of strategic forces, of nuclear forces, and Europe-basing of U.S. nuclear bombs carried by NATO dual-capable aircraft, were essential to both strategic and extended deterrence. All concluded that a hedge capability was needed to respond to unanticipated technical problems or to adverse geopolitical changes requiring force augmentation. All agreed that deterrence could not be based solely on the existence of nuclear forces. Rather, it depends on the ability of forces to hold at risk assets most valued by an adversary. And finally, this meant that force capabilities mattered, and all understood that these capabilities might need to be adjusted as adversary target sets and employment strategies evolved.

Given this continuity in policy, given the current, if fragile, consensus on modernization, and given the successful bipartisan review carried out by the Perry-Schlesinger Panel in 2009, a new bipartisan commission is not needed, nor would its work be timely. Rather, the next President should update the conclusions and recommendations of the 2010 Nuclear Posture Review, based on the global security environment as it has evolved since that review.

The committee asked for views of major considerations for the next Nuclear Posture Review. Very importantly, that review should open the aperture on issues that the Obama team has put to bed, based on its assessment of the future security environment. It must also manage the downside risk that certain recommendations could rupture existing consensus on today's modernization program.

Regarding Russia, my colleague, Keith Payne, is going to go into more detail about Russia, but let me make just one brief point. Russia has an active strategic modernization program underway. More of a concern than Russia's modernization program, however, is its evolving nuclear strategy. If Russia really believes that it could escalate its way to victory, say in restoring the Baltics to Russian rule, then it must be set straight. No conceivable advantage and incalculable downside risks would accrue from any nuclear use against NATO. The next NPR should determine whether existing U.S. declaratory policy in this regard needs to be refined or clarified.

I highlight other major issues for review and resolution. How many ICBMs [intercontinental ballistic missiles] should we deploy at how many bases to meet the security needs while maintaining a robust cadre and career path for ICBM operations? Can ballistic missile modernization be leveraged to reduce costs via a smart approach to common ICBM and SLBM [Submarine-launched ballistic missiles] components? Is additional modernization needed to convey a critical message? That is, U.S. nuclear forces cannot be neutralized by attacks, whether kinetic or cyber, on the nuclear command-and-control system. In light Asian security developments and the continuing challenge of assuring allies, should we seek allied support and concurrence on a plan to demonstrate the ability to deploy U.S. nuclear weapons and dual-capable aircraft to bases in the Republic of Korea and Japan?

There are two looming questions regarding stockpile modernization. First, do we need nuclear warheads with new or different military capabilities? Second, do we need to retain capabilities to develop and produce such warheads, if required? My short answer to the first question is, "Maybe." To the second, it is, "Most assuredly," and we must do more to achieve this objective.

My written statement elaborates on these issues and raises a few others.

Mr. Chairman, some NPR issues will be controversial and, thus, pose a risk to a continuing consensus on modernization. That does not mean the next NPR should not study them. Rather, all of the security implications of alternative courses of action must be vetted before proceeding carefully and with transparency to any recommended changes in posture. This can best be achieved with a Nuclear Posture Review that integrates all elements of nuclear security, not just force posture; embraces all agencies with national security equities, as well as allies; and communicates clearly with Congress and the American public.

Thank you very much.

[The prepared statement of Dr. Harvey follows:]

PREPARED STATEMENT BY DR. JOHN R. HARVEY

INTRODUCTION

Chairman Sessions, Ranking Member Donnelly, and members of the Subcommittee: I am pleased to testify before you today along with colleagues and friends—all of whom reflect the highest standards of public service—about the future nuclear posture of the United States.

My statement today reflects 38 years of experience working nuclear weapons and national security issues, first at Lawrence Livermore National Laboratory, then at Stanford University's Center for International Security and Arms Control and in senior positions in the Departments of Defense (twice) and Energy. From 2009–2013, I served as Principal Deputy Assistant Secretary of Defense for Nuclear, Chemical, and Biological Defense Programs, initially under Ash Carter then serving as Undersecretary for Acquisition, Technology and Logistics. I was his "go to" person for the 2010 Nuclear Posture Review as well as for interactions with the Department of Energy on all aspects of the nuclear stockpile. I provided oversight to DOD acquisition programs to sustain and modernize nuclear delivery systems and systems for their command and control. Today, I consult with several organizations on many of these same issues. My statement today, however, reflects my views and not necessarily those of any organization to which I consult.

PRIORITY ONE—BOLSTERING THE FRAGILE CONSENSUS ON MODERNIZATION

It is worthwhile to take a step back and recall the state of the U.S. nuclear posture in 2009 when President Obama took office. The prospects were grim:

- Funding was insufficient to sustain the R&D base needed for long-term certification of stockpile safety and reliability and, at the same time, recapitalize an aging infrastructure.
- Basic nuclear weapons design, engineering, and production skills and capabilities were increasingly at risk because they were not being exercised.
- Ongoing warhead life extension activities were under funded and constrained in their ability to improve warhead safety, security, and reliability.
- Operations at warhead component production facilities were at increased risk of safety shutdown.
- DOD had yet to step up to its own nuclear modernization needs.
- There was little consensus within Congress, or between the administration and Congress, on the role of nuclear weapons in our national security strategy.
- Many in Congress were concerned that a comprehensive approach to nuclear security had not been clearly articulated, and they were right!

Today, the tide has shifted. Specifically:

- The 2010 NPR was built on a foundation of bipartisan support; in large part, it adopted the recommendations of the Bipartisan Congressional Commission on the Strategic Posture of the United States (aka "the Perry-Schlesinger commission").
- It was achieved with unprecedented interagency cooperation and White House involvement, and defined an integrated/balanced strategy for reducing nuclear dangers.
- Very importantly, the strategy strongly linked our nuclear deterrent to other elements of nuclear security including arms control, nonproliferation, threat reduction, and nuclear counterterrorism.
- High level support across his administration for increased investments in DOE's nuclear weapons programs and DOD's nuclear delivery systems enabled the President to conclude, and convinced the Senate to ratify, the New START Treaty.
- Recent President's budget requests have further increased investment for modernization. To a very large degree, Congress is funding these programs and, as it should, is holding the administration accountable for sustained progress.

Not everything is "fixed," but there is a fragile consensus in place regarding the future nuclear posture and a plan (that changes a bit every year) to achieve it.

To what do I attribute this remarkable demonstration of bipartisanship in a political environment that is as corrosive as many of us can remember? I think the answer is two-fold. First, the actions of Vladimir Putin, in essence to reestablish the Soviet Union, have made it clear to most Americans that optimistic assumptions about the future global security environment are not coming to pass. Recent Russian behavior has also muted the voices of those who sought to hijack, and misrepresent, the President's Prague agenda in calling for unilateral reductions to small numbers now.

Perhaps more importantly, is the commitment of this Committee and its staff (both minority and majority) working together, and together with their House counterparts and with colleagues both inside and outside the Obama administration to do what's right for our nation's security. I must add that vocal support for the President's modernization program from my colleague at the table, Keith Payne, taken at some personal risk, has helped to solidify support of other conservatives not inclined in general to agree with the President.

This decades-long modernization program for all elements of the nation's deterrent—the nuclear stockpile and supporting infrastructure, nuclear delivery platforms, and command and control systems that link nuclear forces with Presidential authority—faces several challenges. The next few years are critical as we climb the so-called modernization "bow wave" of needed investment that peaks in the mid-2020's. The greatest challenge, however, is to bolster consensus, and sustain momentum, in the transition over the next year to a new administration. Continued close attention and bipartisan support from Congress will be essential.

THE 2017 NUCLEAR POSTURE REVIEW

Given changes in the security environment since the 2010 NPR, it is almost certain that the next President will direct a review of the current posture, policies, and programs for U.S. nuclear forces and, very likely, will do this whether or not Congress passes legislation requiring it. What should Congress do? There are three primary options to consider:

- Take no action—leave to the discretion of the next President.
- Direct the next administration to conduct a review of U.S. nuclear posture and deliver, by a date certain, an unclassified report (with classified annex, if needed) on the way ahead.
- Establish a new bipartisan commission to inform the nuclear review of the next President.

In considering options, it is noteworthy that previous NPRs—those concluded by Clinton in 1994, by Bush in 2001, and by Obama in 2010 (informed by Perry-Schlesinger)—reflect much more continuity than change. After evaluating alternatives, all concluded that a strategic triad of nuclear forces—consisting of land- and sea-based ballistic missiles, and heavy bombers—and forward basing of B61 nuclear bombs carried by NATO dual capable aircraft were essential to both strategic and extended deterrence. All concluded that a hedge capability, held in reserve, was needed to respond to unanticipated technical problems with a warhead or delivery system, or to adverse geopolitical changes that required augmentation of deployed forces. All agreed that it is insufficient to base deterrence solely on the existence of some level of nuclear forces; rather, it depends on the ability of forces to hold at risk assets and installations most highly valued by an adversary. Thus, force capabilities mattered and all understood that capabilities might need to be adjusted as adversary target sets and employment strategies evolved.

Given the trend of continuity, given the current, if fragile, consensus on modernization and given the intense bipartisan review that was carried out by Perry-Schlesinger in 2008–09, a new bipartisan commission is not needed at this time. Even if the FY17 NDAA were to establish one, and assuming it became law in late Fall 2016, it would take at least another 18–24 months to get the members appointed, the commission up and running, and recommendations developed. The commission would likely be carrying out its work in parallel with the next administration's nuclear review and would thus not be timely.

Rather, the next administration should review and update the conclusions and recommendations of the 2010 NPR based on the global security environment as it has evolved since that review was completed. This review would benefit from the analyses, assessments, and contributions of experts in the think tank community. Examples include work of the National Institute of Public Policy in informing the 2001 NPR, and recent work (i.e. Project Atom) at the Center for Strategic and International Studies addressing options for the future U.S. nuclear posture.

MAJOR CONSIDERATIONS OF THE NEXT NPR

The Committee has requested that we provide views of "what should be the major considerations and content of the next NPR." Most importantly, the next NPR should "open the aperture" on issues and activities that the Obama administration had "put to bed" based on its assessment of the future global security environment. In doing so, we must manage the downside risk that certain recommendations could rupture existing consensus on today's modernization program.

Russia

Deterring a potentially hostile Russia remains the primary focus of U.S. nuclear forces. Mr. Putin believes he has a "responsibility to protect" ethnic Russians wherever they reside. He has used this argument to intervene in the internal affairs of Moldova, Georgia and now Ukraine including the illegal annexation of Crimea. Putin's modus operandi in Ukraine has not been an all-out armored assault as the Soviets did in Hungary in 1956 and Czechoslovakia in 1968. Rather, he seeks to achieve his political ends by introducing covert forces employing "gray ops" (aka hybrid warfare) to incite, or amplify, instabilities and insurgencies among fringe elements in Eastern Ukraine. He has also given increased prominence to nuclear forces, and to brandishing these forces in seeking to intimidate his perceived adversaries.

What do the events in Ukraine mean for NATO members such as Latvia and Estonia with sizable ethnic Russian populations? Would NATO even recognize that a member state was under such covert assault? How would other members respond under the Article V commitment to defend that member? How should these events be reflected in U.S. and NATO security posture and planning? What does all this mean for the U.S. nuclear posture. These questions are at the top of the list for the next NPR. Ten years ago, few would have imagined the events of the past two years in Ukraine. Today, it must inform our thinking about future conflict.

Russia has an active strategic modernization program underway. Some of it, like ours, involves upgrading older systems at the end of their service lives. Other modernization involves potential qualitative advancements that we must monitor closely so that we are not surprised and, if required, can make a timely (and possibly asymmetric) response. That said, we must be careful not to convey that U.S. modernization is being driven by Russia's. We must modernize whether or not Russia modernizes if we are to retain basic components of an effective Triad.

More so than its modernization program, I am concerned about Russia's evolving nuclear strategy. In short, Russia seems to embrace the threat of limited nuclear use to deescalate a conflict, for example, to solidify near-term gains against a conventionally superior adversary. Does Russia really believe that it could escalate its way to victory say in restoring the Baltics to Russian rule? If it does, then we must set Russia straight that no conceivable advantage at all could ever accrue from nuclear use against NATO. The next NPR should determine, among other things, whether existing U.S. declaratory policy needs to be refined or clarified.

Nuclear Delivery Systems and Command and Control

Several issues involving nuclear delivery systems and nuclear command and control (NC2) are timely for consideration in a new NPR:

- How many ICBMs should we deploy (at how many bases) to meet security needs while maintaining a robust cadre and career path for ICBM operations?
- How best can ICBM and SLBM life extension program be leveraged to reduce costs through a smart approach to commonality (e.g., in solid rocket motors, firing systems, guidance and control, and ground components), recognizing that these two systems experience different operating environments?
- What additional modernization is needed to convey credibly an important message for deterrence; that is, U.S. nuclear forces cannot be neutralized by attacks, whether kinetic or cyber, on the NC2 system?
- In light of security developments in East Asia, and the continuing challenge of assuring allies of U.S. security commitments, is it time to revisit options to:
- Establish and exercise, with allied concurrence and support, a capability to deploy U.S. dual capable aircraft, and nuclear weapons, to bases in Japan and the ROK?
- Restore nuclear capability to carrier air via the F–35?
- Develop and deploy on attack submarines a modern, nuclear, land-attack SLCM?

Are New Military Capabilities Needed?

Two looming questions involving stockpile modernization are worthy of debate and discussion:

- Do we need nuclear warheads with new or different military capabilities?
- Do we need to retain capabilities to develop and produce such warheads?

My short answers to these question are, respectively, "maybe" and "most assuredly." It is timely to review needed military capabilities in light of the evolution of the global security environment including Russia's actions upsetting the emerging post Cold War international order and increased focus on the challenge of deterring escalation in a conventional conflict between nuclear-armed states. At least three options may be seen as pertinent:

- Lower yield options for ICBM and SLBM warheads, at least until a viable prompt global conventional strike capability is achieved.
- Capabilities to hold at risk hardened, underground installations.
- Warheads that provide extended service life, greater margin for enhanced reliability, modern safety and security features, and ease and rapidity of manufacture.

These ideas are not new and I do not think it urgent to develop and field such warheads. That said, consideration of these and other such options should be on the agenda of the next NPR.

The second question addresses the challenge of maintaining capabilities of weapons scientists and engineers to develop and field modern warheads if required by a future President. To maintain such readiness, designers and engineers must be provided opportunities to exercise critical capabilities with challenging design problems.

Over the past decade and more, however, challenging warhead design and development opportunities have been few and far between. Most work today involves warhead life extension programs (LEPs) that do not present sufficiently complex design and development challenges to fully exercise skills. The B61–12 LEP offers challenges to the Sandia teams developing nonnuclear warhead components—e.g., a modern warhead electrical system—but not to the design and engineering teams at Los Alamos. Indeed, the bomb's "physics package" (the warhead primary, secondary, inter-stage and radiation case) is essentially the same as the original bomb.

Today, there are no requirements for new military capabilities. How then can critical skills be exercised? The LEP for an interoperable ICBM/SLBM warhead, called IW1, when compared to today's refurbishment LEPs, presents a formidable challenge for training young designers. The follow-on interoperable warhead (IW2) presents an even greater challenge. Both programs, however, were delayed by five years in recent budgets and are late to need for retaining critical capabilities. The next NPR should review whether to accelerate the IW1 and IW2 LEPs.

Prototyping is another option to exercise the entire design, development and manufacturing enterprise. Here, a modern warhead design would be taken from initial concept through prototype development and flight testing, up to a point where a few are built but not fielded.

The FY15 and FY16 NDAAs have advanced legislation to facilitate retention of capabilities through expanded use of prototype development at the national laboratories, and by establishing a nuclear weapons design responsiveness program as a key component of stockpile stewardship. Absent these initiatives, and possibly within a decade, there is serious risk that the nuclear weapons enterprise will be unable to provide a timely response to unanticipated contingencies. Establishing affordable programs to exploit these opportunities is a challenge for the next NPR.

Nuclear Stockpile and Supporting Infrastructure

Several other issues involving the nuclear stockpile and supporting infrastructure should be addressed with high priority in the next NPR:

Early retirement of the B83 bomb: U.S. hedge strategy seeks to provide two separate, genetically diverse warheads for each leg of the Triad. Sufficient numbers of one warhead are held in reserve to provide backup in the event of an unanticipated technical failure of the other. There are two U.S. gravity bombs—the B61, undergoing life extension, and the B83. Current plans are to retire the B83 well before the end of its service life, and possibly before sufficient experience is gained with the B61–12 LEP to fully assess any "birth defects", in part to avoid a relatively small investment in B83 warhead surveillance. In light of the increased importance of extended deterrence in our security posture, it makes sense to revisit that decision.

W76 backup: A major goal of the "3+2 strategy" for stockpile modernization is to provide a "backup" for the W76 SLBM warhead—the most prevalent warhead in the future force—in the event of unanticipated technical failure. This was to be achieved by fielding interoperable ICBM/SLBM warheads. That specific approach has been called into question, in part by the more urgent need to extend the life of our other SLBM warhead—the W88. In any case, there are insufficient W88s to back up the W76. A new approach is needed to hedge W76 failure.

Recapitalizing uranium and plutonium manufacturing infrastructure: A responsive nuclear infrastructure to repair or rebuild warheads would relieve the need to maintain a large stockpile of reserve warheads to back up the deployed force. We have not had one since the early 1990s. Progress has been made recently on what seems to be affordable approaches to recapitalization. But the capability being provided, particularly regarding plutonium pit manufacture, may not be in time to meet the needs of future LEPs. It is time to resolve this problem.

CONCLUSION

Certain issues will be highly controversial and thus pose a risk to maintaining a continued consensus on modernization. That does not mean that the next NPR should not study them. Rather, all of the security implications of alternative courses of action must be understood before moving forward carefully, and with transparency, to any recommended changes in U.S. nuclear posture. This can best be achieved with an NPR that integrates all elements of nuclear security, not just force posture, embraces all agencies with national security equities as well as allies, and communicates clearly with Congress and the American public.

Tool completed successfully

Senator SESSIONS. Thank you very much.

Dr. Payne.

STATEMENT OF KEITH B. PAYNE, PRESIDENT AND CO–FOUNDER, NATIONAL INSTITUTE FOR PUBLIC POLICY

Dr. PAYNE. Thank you. I greatly appreciate the honor of participating in today's hearings. I thank Chairman Sessions and Ranking Member Donnelly for the opportunity.

I'd like to start by noting that there has been an overwhelming bipartisan consensus on U.S. nuclear policies for the last five decades. The debates that we have had typically have not been over fundamental issues. For example, there is a longstanding agreement that two primary roles for U.S. nuclear weapons are to deter enemies and to assure allies. And from a broad agreement on those two goals follow many points of consensus about what we say and what we do with regard to nuclear capabilities.

For example, because there are a variety of nuclear attacks that must be deterred, and no one knows the minimum U.S. capabilities necessary to deter, it is a longstanding bipartisan consensus in support of hedging, flexibility, diversity, and overlapping U.S. deterrence capabilities. Every Republican and Democratic administration for five decades, including the Obama administration, ultimately has understood the value of hedging flexibility, diversity, and overlapping U.S. deterrence capabilities, and ultimately rejected calls for a minimalist approach to deterrence and deterrence requirements. From that consensus then follows our longstanding support and broad agreement in favor of sustaining a nuclear triad of bombers, land-based, and sea-based missiles.

Similarly, from the agreed fundamental nuclear policy goal of assuring allies follows the continuing consensus behind sustaining some U.S. nuclear forces that are forward-deployed, such as our DCA [Dual-Capable Aircraft] in Europe, or forward-deployable, depending on local conditions and history.

These points of fundamental consensus remain with us today. There are, nevertheless, some recent and unprecedented developments that justify, I believe, a new DOD [Department of Defense] review of U.S. deterrence policy and requirements since the earlier Nuclear Posture Reviews. For example, we need to recognize that the optimistic post-Cold-War expectations about Russia that dominated earlier thinking do not reflect contemporary realities. And we should review U.S. policies accordingly. To be specific, Russian President Putin's strategic vision for Russia is highly destabilizing. It includes the reestablishment of Russian dominance of former Soviet territories via Russification and the use of force, if needed, if

not by preference. Most disturbing in this regard is that Moscow seeks to prevent any significant collective Western military opposition by threatening local nuclear first-use. This is not the Cold War notion of a mutual balance of terror. It is a fundamentally new coercive use of nuclear weapons and threats not really accounted for in earlier NPRs. Russian military officials speak openly of preemptive use of nuclear weapons in a conventional war. And, according to some open Russian sources, Russia has pursued specialized low-yield nuclear weapons to make its first-use threats credible and its nuclear weapons locally employable. If Russia is planning—if Russia's planning now follows this apparent policy—and I have no reason to believe that it doesn't—it tells me that U.S. and NATO deterrence policy is now failing in a fundamental way, and the consequences of that failure could be catastrophic. Consequently, the unprecedented questions to be considered in a new DOD review is how the alliance can effectively deter this combined arms threat to our allies and friends. What deterrence concepts may be applicable in this case, in this new world? What are the corresponding metrics for Western conventional and nuclear force adequacy? And what now should be NATO and U.S. declaratory policies with regard to deterrence?

We also need to consider the prioritization of our nuclear policy goals. The 2010 NPR explicitly placed nonproliferation as the top goal and said that reducing the number and reliance on U.S. nuclear weapons was a key to realizing that top goal. Yet, at this point, the goal of nonproliferation should no longer be used as a policy rationale to further reduce U.S. nuclear deterrence capabilities. After two decades of deep U.S. nuclear reductions and focusing elsewhere, and the emergence of new nuclear—unprecedented nuclear threats, I believe we need to again elevate the priority of the U.S. deterrence mission and related capabilities. Its subordination has had some negative consequences.

Finally, since the end of the Cold War, the study of Russia and the Russian language has declined dramatically in our educational system, in general. And the U.S. intelligence community reportedly has largely divested itself of the capacity to understand Russian nuclear weapons policy, programs, and war planning. That is a dangerous inadequacy. Deterrence strategies depend, fundamentally, on our understanding of the adversary's thinking and planning and capabilities. We need both to better understand and to be able to explain the realities of Russia's goal to change the international order under the cover of nuclear first-use threats. If we hope to deter effectively, we must consider again the intellectual resources necessary to perform that vital task.

There are many other additional points that could be made on this subject, but, in deference to the time limit, I'll stop there and thank you for giving me the opportunity to express my views.

[The prepared statement of Dr. Payne follows:]

PREPARED STATEMENT BY DR. KEITH B. PAYNE

I greatly appreciate the honor of participating in today's hearing.

I would like to start by noting that there has been a near-overwhelming bipartisan consensus on U.S. nuclear policies over the past five decades. Despite the occasional flare ups, our nuclear debates typically have *not* been over fundamentals.

For example, there is a long-standing agreement that two primary roles for U.S. nuclear weapons are to deter enemies and to help assure our allies of their security.

From the broad agreement on these two goals follow many points of consensus regarding what we should do and say about our nuclear capabilities. For example, because a variety of plausible nuclear attacks must be deterred, and no one knows the minimum U.S. capabilities necessary and credible to deter them, there is a long-standing bipartisan consensus in support of *hedging, flexibility, diversity and overlapping U.S. deterrence capabilities.*

Every Republican and Democratic administration for five decades, including the Obama administration, ultimately has understood the value of these attributes and ultimately rejected a minimalist deterrence as inadequate and incredible. From this consensus has followed our longstanding consensus in favor of sustaining a diverse nuclear triad of bombers, land-based and sea-based missiles.

Similarly, from the fundamental nuclear policy goal of assuring allies follows the continuing consensus behind sustaining some U.S. nuclear forces that are forward deployed, such as our DCA in Europe, or forward-deployable—depending on local conditions and history.

These points of fundamental consensus remain with us today.

There are, nevertheless, some recent and unprecedented developments that justify a contemporary DOD review of U.S. deterrence policy and requirements.

For example, we need to recognize that the optimistic post-Cold War expectations about Russia that dominated earlier thinking do not reflect contemporary reality, and review United States policies accordingly: to be specific, the Putin regime's strategic vision for Russia is highly revisionist and destabilizing. It includes the reestablishment of Russian dominance of the near abroad via "Russification" and the use of force if needed. Most disturbing in this regard is that Moscow seeks to prevent any significant *collective* Western military opposition to its offensive military operations by threatening local nuclear first use. The underlying Russian presumption appears to be the expectation that the United States and NATO will concede territory rather than face the possibility of Russian nuclear first use. This Russian strategy is not the Cold War notion of a mutual balance of terror: it is a fundamentally new, coercive use of nuclear weapons and threats.

Russian military officials speak openly of the preemptive employment of nuclear weapons in a conventional war. And according to open Russian sources, Russia has pursued specialized, low-yield nuclear weapons to make its first-use threats credible and its weapons locally employable.

If Russian planning now follows this apparent policy (and I have no reason to believe it does not), it tells me that United States and NATO deterrence policy is now failing in a fundamental way, and the consequences of that failure could be catastrophic.

Consequently, the unprecedented question to be considered in a new review is how the alliance can effectively deter this combined arms threat to our allies and partners: What deterrence concepts may be applicable? And, what are the corresponding metrics for Western conventional and nuclear force adequacy? What are the gaps perceived by Moscow in United States will and capabilities, and how might those gaps be filled? Does the United States need "new" nuclear capabilities for deterrence and assurance, or are the existing options in the stockpile adequate? In addition, according to numerous reports, the U.S. nuclear infrastructure no longer is able to respond in a timely way to the possibility of new requirements for deterrence and assurance. That capability has been lost. If true, what level of readiness should be deemed adequate and what needs to be done to achieve that goal?

We also need to reconsider the prioritization of our nuclear policy goals. The 2010 NPR explicitly placed nonproliferation as the top policy goal, and stated that reducing the number of and reliance on U.S. nuclear weapons was a key to realizing that top goal. The "take away" from that position is that the U.S. must further reduce its nuclear arsenal to serve its highest nuclear policy goal. This point is repeated often by critics of the administration's nuclear modernization programs.

Yet, at this point, the goal of nonproliferation should no longer be used as the policy rationale to further hammer U.S. nuclear deterrence capabilities. After two decades of reducing our nuclear deterrent and focusing elsewhere, and the emergence of unprecedented nuclear threats to us and our allies, the deterrence rationale for reviewing our nuclear policy priorities and the adequacy of our nuclear deterrence forces is overwhelming.

Finally, since the end of the Cold War, the study of Russia and the Russian language has declined dramatically in our educational system in general, and the U.S. intelligence community reportedly has largely divested itself of the capacity to understand Russian nuclear-weapons policy, programs, and war planning. This is a dangerous inadequacy: deterrence strategies depend fundamentally on our under-

standing of an adversary's thinking and planning. If we hope to deter effectively, we must review the intellectual resources necessary to perform this vital task, and begin it again.

There are many additional points that could be made on this subject, but in deference to the time, I will stop here.

Senator SESSIONS. Thank you, Dr. Payne.

Dr. Roberts.

STATEMENT OF BRAD H. ROBERTS, DIRECTOR, CENTER FOR GLOBAL SECURITY RESEARCH, LAWRENCE LIVERMORE NATIONAL LABORATORY

Dr. ROBERTS. And let me add my thanks to you for the opportunity to be here, and to you, Senator Sessions, for the kind plug for my new book.

[Laughter.]

Dr. ROBERTS. You've asked us to highlight elements of continuity and change. And I'd like to look at the—this in two basic phases: the period from the end of the Cold War up to and including the 2009 Nuclear Posture Review, and the period since.

And in the period across the three reviews and the review conducted by the George H.W. Bush administration, but called—not called a Nuclear Posture Review, but, over that period, the two prior panelists have already hit the main point: there's a great deal more continuity than change in U.S. nuclear policy. Every President has wanted to move away from Cold War approaches in nuclear strategy. Every President has wanted to reduce nuclear arsenals. Every President has wanted to reduce the role and salience of nuclear weapons in U.S. deterrence strategies. Every President has also wanted to ensure that deterrence, nuclear and otherwise, would be effective for the problems for which it is relevant in a changed and changing security environment. Each administration has decided to maintain the triad, after, in fact, each administration considering whether or not that was the right outcome. Each has worked to ensure stable strategic relationships with Russia, China, and U.S. allies. Each has rejected mutual vulnerability as the basis of the strategic relationship with new nuclear armed or arming regional challengers, such as North Korea. This is—that last point is a huge driver, of course, of developments in our strategic posture.

Let me also highlight two conspicuous changes over the first three Nuclear Posture Reviews. One is the steadily rising salience of extended deterrence and the assurance of our allies. By the end of the Cold War, we had almost stopped thinking about this problem. And in the 1990s, it was rare to hear a senior defense official, or otherwise, speak about extended deterrence and the assurance of our allies. This problem has come center stage again in our nuclear strategy.

The other important change over those three NPRs relates to the scope of the reviews. The 1999—I'm sorry—the 1994 Review was very much a DOD-only look at force structuring, answering a simple question, Now that the Cold War is over, what do we do with this large force structure? The 2001 Review was more effective at taking a broader look at the fit of nuclear strategy in defense strategy more generally, and looked at how to utilize our nuclear capabilities and strategy to underwrite the objectives of assure, dis-

suade, deter, and defeat. And the 2009 Review was the broadest by far. It was the first that was interagency in character. This, by the way, was mandated by the Congress. It was the first that tried to integrate all of the different elements of nuclear policy and strategy into a comprehensive hole. So, deterrence, extended deterrence, strategic stability, arms control, nonproliferation, and disarmament. That was, in part, what the Congress wanted the new administration to do, and it's, in part, what the new administration wanted to do. My view is that this was helpful, that a broad interagency process was effective in, one, ensuring the needed leadership focus and ensuring the leadership buy-in in the results of the review.

Now, second phase, looking back now at the period since the 2009 NPR. Let me highlight four key changes bearing on the scope and content of our nuclear strategy. The first is, of course, the abrupt turn in Russian security policy in spring 2014. With this, it's no longer possible to say, as we did in 2009, that the relationship with Russia was improving and presenting minimum risk of armed conflict. That's manifestly not the case today. But, as the new threat is principally to our NATO allies, our national response needed to focus on adapting, modernizing, and strengthening deterrence in Europe. This process began with the 2013 Wales Summit, a few months following the annexation of Crimea, and will be accelerated at the upcoming July Warsaw Summit. Now, does this require a change in U.S. nuclear policy or posture, this change in Russian orientation? Does this require a change in U.S. nuclear policy or posture, separate and apart from NATO's posture? I don't think so. No administration moved away from parity as the guiding principle in our overall strategic nuclear relationship with Russia. We, the Obama administration, maintain an express commitment to strategic equivalence with Russia and to the second-to-none force-sizing criterion.

Now, the argument has been made, not by anyone on this panel, that Russia's nuclear assertiveness requires a comparable nuclear assertiveness by the United States and by NATO, and that Russia's buildup of its nuclear force and development of new nuclear weapons with new military capabilities for new military purposes requires a like response from the United States and NATO. Keith has already discussed some of the deficiencies in NATO's nuclear posture, and he almost didn't mention hardware. The deficiencies in NATO's nuclear posture are largely in the software side. And by that I mean how the alliance has talked about, displayed, and exercised its commitment to nuclear deterrence. I don't think the commitment ever went away, but it's been difficult to find amidst all the other noise.

I said I'd highlight four key changes since 2009. The first is about Russia, of course. The second is that we have now learned, the Obama administration and its supporters, that the conditions do not now exist, and are not proximate, that would allow us to take substantial additional steps to reduce the role and number of U.S. nuclear weapons. Remember that the implementation of the Prague Agenda was—has been pragmatic in character. The administration set out a plan of action to try to create the conditions that would allow others, other nuclear weapon states, to join with us in

further steps to reduce the role and number of nuclear weapons. After 7 years, what do we have to show for that? Russia's not willing to take the additional one-third reduction that we would be willing to take if they were willing to do so on a reciprocal basis. China hasn't even agreed to talk about nuclear weapons or to join in strategic stability talks. It certainly hasn't accepted any new nuclear transparency measures at a time of a buildup of its capabilities. North Korea has continued its steady progress towards a small nuclear force that will be capable of reaching out and putting the United States at risk. And our allies have shown themselves, in both Europe and Northeast Asia, unwilling to shed the last part of the capabilities that we uniquely associate with extended deterrence, which is our ability to forward-deploy B61 bombs in combination with dual-capable aircraft.

So, I don't think this means we should abandon our disarmament nonproliferation and arms control objectives. I think we should recognize that they are unlikely to pay any significant dividends anytime soon, dividends measured in terms of what we need in the way of our nuclear forces. We should not abandon the balanced approach set out by the Perry-Schlesinger Commission, but we should temper our expectations.

I think, lastly, the debate will occur about whether—if Russia is unwilling to join us in further arms control, should we simply not proceed on our own, unilaterally? We see signs of that debate already. Of historical note is the fact that two Republican administrations since the end of the Cold War were willing to take unilateral steps to reduce U.S. nuclear forces. And, of note, neither Democratic administration has been willing to do so. So, I think we'll have this debate, whichever stripe is in the White House.

Third change. In the period since 2009, the more multidimensional nature of strategic conflict has come more clearly into focus. Nuclear weapons, missile defense, cyberspace, outer space, may all be separate domains, but they're all part of other same strategic landscape, and they're all a part of what we would face if ever there were to be a significant military confrontation with Russia or China.

This puts a focus on the challenge of ensuring the needed degree of integration across these capabilities in our policy. This invites an important question about the scope of a possible 2017 Review. We, the Obama administration, conducted a QDR [Quadrennial Defense Review], an NPR, a Ballistic Missile Defense Review, a Cyber Review, and a Space Review. Should another administration do the same thing? Good question. I think integration would be important and valuable, but I don't see us not doing a repeat of other Nuclear Posture Review as a self-standing activity.

The fourth and final difference is in the political context. And you've already heard remarks on this from both panelists. We should recall the stark divisions and paralysis that marked the executive-legislative process 8 to 9 years ago. The word has been used around this table a number of times now about a consensus. I'm skeptical about this consensus. I think it's neither broad nor deep. I'm not sure it extends beyond many people at this table. And I think preserving it and deepening it will be, and must be, a key objective of the next administration. And, in my view, this requires

being mindful of those initiatives that might seem rewarding in the development of new capabilities, but would be damaging to the political will to proceed with life extension activities.

Lastly and briefly, let me highlight three key elements of continuity since 2009 that I think we haven't so far discussed:

The first is about Asia. The 2009 Nuclear Posture Review was really the first to give a very prominent place to thinking about Asia in our nuclear strategy. Our focus is always, traditionally, on Russia. How do we put a focus on China? Our focus on extended deterrence has almost always been about Europe. How do we think about the extended deterrence requirements of Northeast Asia and the particular assurance requirements of allies there? These remain important tasks, and we can't let our focus on Russia and our concern about Russia distract us from the Asian environment.

Secondly, let me put a finer point on a point John Harvey made. We've said, all three administrations, we want a hedge, we need a hedge, the need for the hedge is rising because the geopolitical environment is becoming more uncertain. We will—we've committed to reducing our reliance on a large stockpile of uploadable weapons that are aging and expensive to maintain by increasing our reliance on a flexible, adaptive nuclear infrastructure to produce new capabilities in the future if we need them, we don't have it. We're not getting closer to having it. We're not even sure what that would cost. This is a problem that the Strategic Posture Commission in 2009 very much emphasized, and where the problem still sits in front of us today.

Lastly, each administration has debated whether new nuclear weapons for new military purposes with new military capabilities are needed. We are certain to have this debate again. We should have this debate. It's an important debate to have. There is no unmet military requirement today. I don't believe you've heard from the STRATCOM commander, or a former commander, indicating that there is some significant deficiency, in terms of STRATCOM's ability to deliver on the guidance it's been given. There is a gap in technical capability. These weapons are old. Where they're deficient is in their age.

Is there a case for new nuclear weapons? Yes. One argument we've heard is that this will reinforce deterrence because it will give us a lower-yield option that the President might find more credible to threaten. Another argument is that we need new weapons in order to enhance the ability of our laboratories to produce in the future. These are both valid arguments. I find, on balance, neither of them persuasive. I think we can move to the prototyping of new weapons without producing new ones, and gain the benefits that we need in our infrastructure. And I think there are other ways, other than hardware fixes, to deal with the deficiencies in our deterrence posture.

Thank you, Mr. Chairman.

[The prepared statement of Dr. Roberts follows:]

PREPARED STATEMENT BY DR. BRAD ROBERTS

Thank you for the opportunity to participate in this preliminary discussion of a possible 2017 Nuclear Posture Review. I would like to underscore that the views I am presenting here are my personal views, following on my service as Deputy As-

sistant Secretary of Defense for Nuclear and Missile Defense Policy from 2009 to 2014 (in which capacity I was co-director of the 2009–10 NPR) and on my authorship of a recently published book on U.S. nuclear policy (*The Case for U.S. Nuclear Weapons in the 21st Century,* Stanford University Press, December 2015). Please do not attribute my views to my new employer as of last spring, Lawrence Livermore National Laboratory.

You have asked us to highlight elements of continuity and change in U.S. nuclear policy. Surveying the nuclear policies of all four post-cold war administrations, the continuities are striking. Every president has wanted to move away from Cold War approaches, to reduce nuclear arsenals, and to reduce the role and salience of nuclear weapons in U.S. deterrence strategies. Every president has also wanted to ensure that nuclear deterrence would be effective for the problems for which it is relevant in a changed and changing security environment. Each administration has decided to maintain the Triad. Each has worked to ensure stable strategic relationships with Russia, China, and United States allies. Each has rejected mutual vulnerability as the basis of the strategic relationship with new nuclear-armed or arming regional challengers.

Let me also highlight two conspicuous changes over the three nuclear posture reviews. One is the rising salience of extended deterrence and the assurance of our allies—which has returned to as central a place in our nuclear strategy as it had at the height of the Cold War. The other change relates to the scope of the reviews. The 1994 review was the narrowest of the set, focused largely on force structure decisions. The 2001 review was broader, linking strategies for modernizing deterrence to a changing defense strategy. The 2009 review was the broadest. As mandated by Congress, it was DOD-led but interagency in character and fully elaborated the "balanced approach" recommended by the Perry-Schlesinger Strategic Posture Commission (balancing political means to reduce threats with military means to deter them so long as they exist). Such a broad review helped to ensure leadership focus, leadership "ownership" of main messages, and effective interagency implementation. These are important benefits of continuing value.

From the vantage point of January 2016, what are the key elements of change and continuity bearing on the U.S. nuclear posture? I will briefly highlight here four key changes.

1. With the abrupt turn in Russian security policy in spring 2014, it is no longer possible, as it was in 2009, to characterize the relationship with Russia as improving and presenting minimum risks of armed conflict. But as the new threat is principally to our NATO allies, our national response needs to focus on adapting and strengthening deterrence in Europe. This process began with the 2013 Wales summit and will be accelerated at the upcoming Warsaw summit. Does this require a change in U.S. nuclear policy or posture, separate and apart from NATO's posture? The current posture is sized and structured to maintain strategic stability with Russia. The Obama administration, like its predecessors, has maintained "second to none" as a guiding principle and has maintained the resilience of the force so that it is not vulnerable to a preemptive strike. The argument has been made that Russia's nuclear assertiveness requires a parallel nuclear assertiveness by the United States and that its large and diverse theater nuclear force requires a symmetric NATO nuclear force, along with a new generation of ultra low-yield weapons. The deficiencies in NATO's nuclear posture are not in its hardware, however, which is robust for the deterrence of Russian de-escalation strikes. The deficiencies are in its software—in the ways in which the Alliance expresses its convictions about the role of nuclear deterrence (and which will be addressed in Warsaw).
2. In the period since 2009, we have learned that the conditions do not now exist—and are not proximate—that would allow us to take additional substantial steps to reduce the role and number of U.S. nuclear weapons. The Obama administration set out a practical agenda for seeking cooperation with other nuclear-armed states to move in this direction. What are the results? Russia has proven unwilling to take an additional one-third reduction. China has proven unwilling to embrace new transparency measures—or even to discuss strategic stability. North Korea has continued its nuclear build up. Our allies are unwilling to abandon the U.S. nuclear capabilities uniquely associated with extended deterrence (i.e., non-strategic nuclear weapons forward-deployed or deployable). This does not mean that the United States should abandon the arms control, nonproliferation, and disarmament projects. Doing so would only further aggravate the problem. We should not abandon the "balanced approach." But the United States should temper its expectations. And it should refrain from unilateral steps that supposedly put pressure on others to join us.

If it made no sense in 2009 to take unilateral action to eliminate a leg of the triad, it makes even less sense today.

3. In the period since 2009, the more multidimensional nature of strategic conflict has come more clearly into focus. Nuclear weapons, missile defense, cyber, and space may be separate domains, but they are all part of the same strategic landscape. This puts a focus on the challenge of ensuring the needed degree of integration in policy, strategy, and execution. This invites an important question about the scope of a possible 2017 review. The Obama administration conducted a set of separate but linked reviews of these different posture elements. Might an alternative approach enable more effective integration? Possibly. But a single, comprehensive strategic review would be difficult to do on an interagency basis, whereas the 2009 NPR benefited significantly from that interagency aspect.
4. A final key difference is in the political context. In the lead up to the Obama administration, executive-legislative gridlock had prevented any modernization decisions. The Strategic Posture Commission (SPC) helped to remedy that problem, with its bipartisan advice to the Obama administration to pursue modernization by life extension, which the administration accepted. In the interim, we have not recovered a broad and deep bipartisan consensus on nuclear modernization. But we have achieved sufficient agreement within and across the parties to enable a series of positive decisions to support modernization with steadily increasing investments. This needs to be preserved and nurtured. Repeating the SPC would not be useful or necessary toward that end. A private bi-partisan initiative could, however, help set the right context and provide the right markers for the journey ahead.

Let me round out my introductory remarks by highlighting three key elements of continuity since 2009.

1. Asia is as relevant to the United States nuclear posture as is Europe. China's nuclear future has nearly as many large question marks as does Russia's. Our pursuit of strategic stability with both needs to continue to adapt. Our Northeast Asian allies are as anxious about extended deterrence in a changing security environment as are our Central and Northern European allies. Don't let the Russia problem distract us from this strategic truth
2. We still don't have the hedge we say we want. Each administration since the Cold War has wanted to ensure that we have a strong national capacity to respond to both geopolitical and technical surprises. Each has wanted to reduce reliance on a large and expensive-to-maintain stockpile of aging nuclear weapons as a hedge against uncertainty by increasing reliance on a responsive and adaptive nuclear weapons complex. The Strategic Posture Commission put special emphasis on this point. Fixing this problem with the proper investment and governance strategies should be a key priority. I know of no one who thinks that the risks of geopolitical and technical surprise are declining.
3. Each administration has debated whether new nuclear weapons are needed –and we are certain to have this debate again. The George W. Bush administration's pursuit of new weapons came to a political dead end. The Obama administration's pursuit of a modern arsenal through the life extension of existing capabilities has been more successful. There are two arguments for new weapons—that we need them for deterrence and that we need them to sustain our national design competence. Both arguments have some merit. But there is no good reason to think that a new effort to build new weapons for new military purposes would not too come to a political dead end. Moreover, there are other means to strengthen deterrence and sustain design competence.

Thank you for the opportunity to join in this discussion. I look forward to your questions.

Senator SESSIONS. Thank you.

Mr. Miller.

STATEMENT OF FRANKLIN C. MILLER, PRINCIPAL, THE SCOWCROFT GROUP

Mr. MILLER. Mr. Chairman, Ranking Member Donnelly, members of the committee, it's an honor to be in front of you. It's an honor to be here with my colleagues, with whom I have spent decades working together. It's an honor to see Senator Sullivan, with whom I spent time on the NSC [National Security Council] staff, back in the old days.

You asked me, sir, to comment on our nuclear——

Senator SESSIONS. Was he as brilliant then as he is today?

Mr. MILLER. Yes, sir, he was.

You asked me to comment on our nuclear posture, which I understand personally to mean our understanding of the threats we face, our declaratory policy, and the state of our forces. And sadly, I must report to you that I'm deeply concerned on all counts. I believe we have declined in all three areas since the beginning of this century.

It should be evident by now, although, astonishingly, it isn't in all quarters of this town, that the world President Obama called for in his April 2009 Prague speech is not the one he's bequeathing to his successor. Rather than reducing reliance on nuclear weapons, North Korea, Russia, and China have significantly increased the role those weapons play in their national security strategies. North Korea is now a nuclear weapon state. China is modernizing its long-range nuclear forces across the board. President Putin, over the last 10 years, has engaged in an across-the-board modernization of his strategic nuclear forces and his theater nuclear forces—in the process, violating the 1991–1992 Presidential Nuclear Initiatives and the INF Treaty. Russian Defense Minister Shoygu remarked last month that 56 percent of Russian nuclear forces are new. You know about the dangerous military activities that the Russians are engaged in using their strategic bombers, their nuclear exercises which explicitly target NATO members, and you've heard the stream of saber-rattling statements coming from Putin and his cadre, the likes of which have not been heard since the days of Nikita Khrushchev.

Regrettably, our declaratory policy, apart from stating, quote, "As long as nuclear weapons exist, the United States will maintain a safe, secure, and reliable deterrent," close quote, our policy has not recognized the threats posed by the developments I've just described. Deterrence rests on getting inside the head of the potential aggressor. If we think of history, to the extent our unwillingness to respond is perceived by the Russian leadership as weakness, much as Hitler perceived the failure of Britain and France to respond to his reoccupation of the Rhineland and his annexation of Austria and Czechoslovakia, to the extent that he, Hitler, saw that as proof Britain and France would not defend Poland, then we, ourselves, have to be concerned whether we've left the door open to potential Russian miscalculations, miscalculations which could prove fatal in a crisis. We need to make clear to Mr. Putin that, despite what he says in his exercises, that any use of a nuclear weapon—any use—could lead to unpredictable outcomes which could result in the destruction of his country as well as the rest of the world.

Moreover, in sharp contrast to both Russia and China, the United States has not deployed a new strategic system in this century. The bomber and ICBM legs of our triad have significant deficiencies. And yet, the modernization programs for all three legs of the triad remain in the planning stages, with new systems not due in the field until the mid- to late-2020s. Even given that, we hear the arms control community calling for the end of the long-range standoff weapon, which would take the B–52 out of the triad and essentially eviscerate the air leg of the triad, killing the B61 bomb,

which would end our nuclear forward presence in NATO and end our nuclear sharing there, calls to cancel the Minuteman ICBM Modernization Program, and even calls to cut back the number of new replacement submarines.

As a result of all of this, I do believe a major review of our nuclear posture is required to better align us to deter foreign leaders whose polices, pronouncements, and investments in nuclear forces suggest they might actually believe in military use of such weapons in a crisis.

I may have a slightly different take from my colleagues—some of my colleagues, however, on how that review should be carried out. I believe it is incumbent on any new administration to review its predecessor's policies. Certainly, this is true with respect to defense policies and nuclear policies. But, I believe such a review should be conducted promptly and quietly in a highly classified manner within a select group of policymakers and senior military officials in the Pentagon. The results of that review should be shared with the President and the Vice President. Changes which the review might suggest, if approved by the Secretary of Defense or by the President, as appropriate, should then be implemented and announced when—at a time, and in a manner it achieves maximum security benefits for ourselves and our allies. The relevant congressional committees should be consulted and kept abreast of decisions which may have been required, and all of this well before any public rollout.

But, the hype and publicity created by holding congressionally mandated Nuclear Posture Reviews tends, on the other hand, to create significant and early expectations that there will be opportunities for all interested parties to comment on the draft changes and to affect their trajectory. In particular, the inclusion of the State Department and the White House staff have led to an overemphasis on arms control initiatives and nonproliferation policies. While those are important, the basic nuclear posture which the United States requires to deter an attack on ourselves and on our allies should be decided on firm national security principles. Having decided these, an administration can expand its focus, where arms control may be able to help support nuclear stability on a regional or global basis. And it is here that the State Department will, of course, have a role. Again, however, this should be after basic deterrent requirements have been established.

There are other good arguments against recreating prior NPRs. Full-blown interagency involvement in Nuclear Posture Reviews tends to increase significantly the amount of time necessary to reach and, therefore, to implement conclusions. Endless meetings of interagency working groups serve to slow the review process and don't improve its results.

Furthermore, holding NPRs on a quadrennial basis has created the expectation that nuclear policy needs to change with every new administration. Contrary to changing policy simply because a new administration has taken office are the facts that the basic tenets—as has been described, the basic tenets of our deterrence policy, as contrasted with their implementation, have been remarkably consistent over the decades, and this has served our country well, as well as our allies. And the basic tenets include deterrent threats

on the ability to convince an enemy leadership that our retaliation will impose costs which will outweigh any gains he hopes to make. To be credible, we must have a retaliatory force which can clearly impose the costs our policy requires, even under the worst-case conditions of a surprise attack. And our retaliation must focus on assets the enemy leadership values, not on what we value. This means, as Keith Payne suggested, we must always continue to study potential enemy leaderships to understand their value structures.

I say all of this based on my own experiences in the Department of Defense. Beginning in October 1981, I became the senior-most official in OSD [Office of the Secretary of Defense] policy tasked on a day-to-day basis with managing U.S. nuclear deterrence policy. And I maintained that position through January 2001, when I was detailed to the NSC. During the period 1981 to 2001, we in OSD, working with the Joint Staff and the Nuclear Staff in Omaha, and with the strong support of several Secretaries of Defense, one, corrected the perception that the Reagan administration believed in nuclear warfighting; two, completely reconfigured U.S. declaratory policy; three, weathered the nuclear freeze and nuclear winter movements while maintaining support for our deterrent; fourth, maintained the vast majority of our strategic triad modernization efforts on track; fifth, completely overhauled the Nation's nuclear war plans twice, once during the period 1989 to 1991, and then again as Russia began to—as the USSR began to disintegrate, we did it again in 1991; and based, lastly, on a firm understanding of our deterrent needs, developed proposals which formed the basis of the 1991–1992 presidential initiatives and the START II Treaty.

Most of this was done within the defense establishment and public mention by the then-Secretary of Defense when final decisions were made or approved by himself or the President. Some of the major changes, specifically those involving war plans, were never announced. We didn't raise public expectations that change was necessary, nor, in both Democratic and Republican administrations, did we ask for public comment on what we proposed to do. Neither did we involve the other executive branch departments and agencies, with the exception of coordinating with the Department of Energy on developing and fielding the new nuclear warheads. The one NPR in which I was involved, that of 1993–94, proved a disappointment, in that it raised many expectations about radical changes in our posture which were not fulfilled because the international situation made such changes imprudent at best, and dangerous at worst. Accordingly, I would urge Congress not to mandate the incoming administration to conduct another Nuclear Posture Review, even though I would recommend that that review take place quietly and internally.

Mr. Chairman, I thank the committee for asking me to testify, and I look forward to answering your questions on my somewhat different views.

[The prepared statement of Mr. Miller follows:]

PREPARED STATEMENT BY FRANKLIN C. MILLER

Committee Tasking: "We would like you to provide an assessment of the continuities and changes in the U.S. nuclear posture since the end of the Cold War, with

an eye toward what we've gotten right and what policies and/or assumptions have not been borne out by recent events. Most importantly, please provide the committee your thoughts about how the current nuclear posture should be changed to address the strategic environment as you see it evolving over the next 25 years. In other words, what should be the major considerations and content of the next nuclear posture review."

I am honored to be here and would like to thank the Committee for asking me to join my distinguished colleagues and friends on this panel. I have worked with each of these gentlemen for many many years and I deeply respect them and their contributions to the United States.

THE NUCLEAR POSTURE OF THE UNITED STATES

You asked me to comment on our nuclear posture—which I understand to mean our understanding of the threats we face, our declaratory policy and the state of our forces. Sadly, I must report to you that I am deeply concerned on all counts, and that I believe we have declined in all three areas since the beginning of this century. It should be evident to all, although astonishingly it is not so—particularly in the Washington-based arms control village—that the world President Obama called for in his April 2009 Prague speech is not the one he is bequeathing to his successor. Rather than reducing reliance on nuclear weapons, Russia, China, and North Korea have all significantly increased the role those weapons play in their respective national security strategies. North Korea is now a full-fledged nuclear weapons state. China is engaging in a major modernization of its intercontinental land-based and sea-based nuclear missile forces.

And President Putin has increasingly over the last decade, presided over an administration which is:

- Engaged in an across-the-board modernization of both its strategic nuclear triad and its shorter range nuclear forces, in the process violating both the landmark 1987 Intermediate Nuclear Forces (INF) Treaty and the 1991–1992 Presidential Nuclear Initiatives (PNIs). In sharp contrast to our programs, which are with the exception of updating the antiquated B–61 bomb all in the planning phase, the Russians are deploying their new systems on land and at sea. Last month Russian Defense Minister Shoigu stated that over 50% of Russian nuclear forces are "new";
- Using strategic bombers to engage in highly dangerous military activities and maneuvers adjacent to the our own airspace and that of our NATO and Pacific allies (in some cases actually endangering civil aviation);
- Carrying out a series of nuclear exercises which explicitly simulate attacks on our NATO allies; and
- Issuing a stream of nuclear saber rattling policy statements and specific threats, including many by Putin himself, the likes of which have not been heard since the days of Nikita Khrushchev.

Regrettably, our declaratory policy, apart from stating that "as long as nuclear weapons exist the United States will maintain a safe, secure and reliable deterrent" has not recognized the threats posed by the developments I have just described. To the extent that our unwillingness to respond is perceived by the Russian leadership as weakness—much as Hitler perceived the failure of Britain and France to respond to his reoccupation of the Rhineland and his annexations of Austria and Czechoslovakia as proof that London and Paris would not defend Poland—then we have left open the door to potential miscalculations by Mr Putin and his gang, miscalculations which could prove deadly in a crisis.

Moreover, in sharp contrast to both Russia and China, the United States has not deployed a new strategic system in this century. The bomber and ICBM legs of our Triad have significant deficiencies. And yet, the modernization programs for all three legs of the Triad remain in the planning stages, with new systems not expected in the field until the mid-to-late 2020's. Worse yet, the arms control community continues—despite the deal it struck to support Triad modernization in exchange for ratification of New Start—to call for slashing the modernization programs: eliminating the replacement for the air launched cruise missile (thereby taking the B52 out of the Triad and eliminating our ability to use the so-called "bomber discount rule" which then-Strategic Command head General Bob Kehler said was crucial to maintaining sufficient strategic weapons numbers under New Start); eliminating the replacement for the Minuteman ICBM; cancelling the B61 modernization program, thereby ending NATO's forward based nuclear deterrent and its concurrent nuclear risk- and burden-sharing; and cutting back the number of SSBNs (which, in the aggregate, will carry upwards of 70% of our deterrent under New Start).

As a result of all this, I believe a major review of our nuclear posture is required in order to better align us to deter foreign leaders whose policies, pronouncements, and investments in nuclear forces suggest that they might actually believe in military use of such weapons in a crisis.

REVIEWING OUR NUCLEAR POSTURE OR A HOLDING NEW NUCLEAR POSTURE REVIEW

I believe I have a slightly different take from my colleagues, however, on how that nuclear review should be carried out. Let me say at the outset that I believe it is incumbent on every incoming Administration to review its predecessor's policies. This is certainly true with respect to defense policies and particularly the case with respect to nuclear deterrence policy and the programs and plans which support that policy. Where I believe I may part company with my colleagues, however, is that I believe such a review should be conducted promptly and quietly and in a highly classified manner, within a select group of policy makers and senior military officials in the Pentagon; the results of such a review should be shared with the President and the Vice President. Changes which the review might suggest, if approved by the Secretary of Defense or the President, as appropriate, should then be implemented and announced when appropriate and at a time and in a manner which achieves maximum national security benefit for the United States and our allies. The relevant Congressional Committees should be consulted where appropriate and kept abreast of decisions which may have been required—and all this well before a public roll-out.

The hype and publicity created by holding "Congressionally-mandated Nuclear Posture Reviews" tends, on the other hand, to create significant and early expectations on the Hill and elsewhere that there will be opportunities for all of the interested parties—Congressional, other Executive branch agencies, and public interest groups—to comment on the draft changes and to affect their trajectory. In particular, the inclusion in the past of the State Department and the White House staff have led to an over-emphasis on arms control initiatives and non-proliferation policies. While those are important, the basic nuclear posture which the United States requires to deter attack on ourselves and on our allies should be decided on firm national security principles; having decided these, an Administration can expand its focus to where arms control might be able to help support nuclear stability on a regional or global basis—and it is here that the State Department will have a role. Again, however, this would be after the basic deterrent requirements had been established.

There are other good arguments against recreating prior NPRs. Full-blown interagency involvement in Nuclear Posture Reviews also tends to increase significantly the amount of time necessary to reach—and therefore to implement—conclusions; endless meetings of interagency working groups serve to slow the review process and do not improve its results. Furthermore, holding NPRs on a quadrennial basis also has created the expectation that nuclear policy needs to change with every new Administration. Contrary to changing policy simply because a new Administration has taken office are the facts (1) that the basic tenets of U.S. nuclear deterrence policy (as contrasted to the implementation of those policies) have been remarkably consistent over the decades, and (2) that such consistency has served the nation, and our allies, well.

Those basic tenets include:

- Deterrence rests on the ability to convince an enemy leadership that our retaliation will impose costs which will outweigh any gains he hopes to make through his aggression;
- To be credible, we must have a modern retaliatory force which can clearly ipose the costs our policy requires—even under the worst-case conditions of a surprise attack;
- Our retaliation must focus on assets the enemy leadership values—not on what we value; this means we must always study potential enemy leaderships tho understand their value structures;

My views are based on my own experiences in the Department of Defense. Beginning in October 1981, I became the senior most official in OSD/Policy, tasked on a day-to-day basis with managing U.S. nuclear deterrence policy (with the exception of actual nuclear target planning). In 1985, I also assumed responsibility for nuclear target planning. As I advanced in my career, rising to be a Deputy Assistant Secretary, a Principal Deputy Assistant Secretary, and an Assistant Secretary, I maintained control of the nuclear portfolio. This continued through January 2001, at which point I was seconded to the White House as Senior Director for Defense Policy and Arms Control. During the period 1981–2001, we in OSD, working with the

Joint Staff and the nuclear staff in Omaha, and with the strong support of several Secretaries of Defense:

- corrected the perception that the Reagan Administration believed in nuclear war-fighting,
- reconfigured U.S. declaratory policy,
- weathered the nuclear freeze and nuclear winter movements while maintaining support for our deterrent,
- maintained the vast majority of the strategic Triad modernization efforts on track,
- completely overhauled the nation's nuclear war plans twice (once during the period 1989–1991, and then again as the USSR was beginning to disintegrate in 1991)
- and, based on a firm understanding of our deterrent needs, developed proposals which formed the basis of the 1991–1992 Presidential Nuclear Initiatives with Russia and of the START 2 Treaty.

Most of this was done within the Defense establishment, and public mention was made by the then-Secretary of Defense when the final decisions had been approved either by himself or by the President. Some of the major changes, particularly those relating to the war plans, were never announced. We did not raise public expectations that change was necessary nor, in both Democrat and Republican Administrations, did we ask for public comment on what we proposed to do. Neither did we involve the other Executive Branch departments and agencies (with the exception of coordinating with the Department of Energy on developing and fielding new nuclear warheads.) The one NPR in which I was involved, that of 1993–1994, proved a disappointment in that it raised many expectations about radical changes in our posture which were not fulfilled because the international situation made such changes imprudent at best and dangerous at worst. Accordingly, I would urge Congress not to mandate that the incoming Administration conduct yet another Nuclear Posture Review.

Mr. Chairman, I again thank the Committee for asking me to testify and I look forward to answering any questions the Committee might have for me.

Senator SESSIONS. Thank you. Well, it's an important situation we're dealing with.

I hope, as we go forward, maybe we'll take turns. If somebody would like to follow up a little bit on what the previous questioners' questions were out of turn, just raise your hand, and—if you want to clarify something. Let's don't be afraid to ask simple questions, because sometimes those are the best questions that get asked.

We had Secretary James of the Air Force testify this morning. She repeated what others have said, that Russia represents the greatest threat, or the potential greatest threat, to the United States. It's sort of painful to hear that said, when we were so hopeful other things might—things might be different.

So, we've had some assumptions for a long time that have driven our nuclear strategy. And let me ask you about this. So, one of the assumptions I think were—is that great power conflicts—Russia/United States, in particular—are a thing of the past. Another one was, it—the United States should lead and that others would follow to reduce the importance of nuclear weapons to their national security. I would say—this is one quote the President delivered in South Korea, under the umbrella, "As President, I've changed our nuclear posture to reduce the role and number of nuclear weapons in our national security strategy. I made it clear the United States will not develop a new nuclear warhead, will not pursue new nuclear missions for nuclear weapons. We've narrowed the range of contingencies under which we would ever use, or threaten to use, nuclear weapons." It was a pretty historic statement, I thought, particularly in light of where it was delivered.

Rose Gottemoeller, in Prague in 2015—2014, December—at a—altered that position a bit. She says, quote, "We are seeing new and

enduring pressures on the nonproliferation regime, pressures that threaten global stability. We are seeing nations turn away from cooperation, turn away from the common good of nonproliferation efforts and cling ever more tightly to their nuclear arsenals."

Another early assumption was that conventional substitutes for nuclear weapons—conventional weapons—would diminish the need for nuclear weapons. It—so, here we'd like to—I'll start with Dr. Harvey. You started this off. And maybe we'll take a minute or two here and discuss. Have assumptions—do our assumptions need to be changed?

Dr. HARVEY. I would say, first of all, that I think the greatest nonproliferation mechanism since the end of World War II has been the North Atlantic Alliance and the extension of nuclear forces from the United Kingdom, France, and the United States to that alliance so that countries—many countries in that alliance who had the capability, both technical and political, to produce their own nuclear weapons have not. In this—and by the same course, our extension of our deterrent to Japan and South Korea have provided the disincentive for those two countries to develop their own nuclear weapons. Another success for nonproliferation. So, I think you need to look at this from that perspective.

The second point I want to make was one you made earlier, which is that I would say part of the continuity is—from all—since the end of the Cold War, all presidential administrations have sought to reduce the role of nuclear weapons. President George W. Bush, a fundamental part of his Nuclear Posture Review was the inclusion of defenses—conventional defenses and the inclusion of precision conventional strike to try to free up some of the needs for nuclear weapons to fill some of those roles.

Senator SESSIONS. I guess that time is going to——

And, Dr. Payne, you—if you would respond. And—but, it does appear that the goal—the presidential policy, as the President Stated in South Korea, not to develop new weapons, and et cetera, et cetera, we have—it hasn't had the desired result, it would seem to me.

But, anyway, what's your comment, in general?

Dr. PAYNE. Thank you, Mr. Chairman.

Let me comment on the first point that you made, the notion that conflict is a thing of the past. This was one of the great hopes of the post-Cold War order. We were going to be in a new world order that was going to be more benign. And, particularly, we and the Russian Federation would be able to cooperate and possibly even get to near-allied status. Go back and look at—that was——

Senator SESSIONS. That was absolutely the dream.

Dr. PAYNE. That was the hope and, in some cases, the expectation, even. Even as recently as 2012, a former Vice Chair of the Joint Chiefs of Staff said the idea of conflict between the United States and Russia is a thing of the past, not the future.

Let me just suggest, as an extension of what I said earlier, is that, given what we now know the Russians are saying, both externally and to themselves in their open documents, their views are based on a very different understanding of how the world now works. They are talking about an expansion of Russian dominance into areas that we thought were settled in the post-Cold War order,

including the change of territorial borders by force, if necessary. And what they talk about is the use of nuclear threats, and, indeed, even nuclear employment, if necessary, as cover for that Russification and expansion of Russian domination. Unfortunately, we've seen conflicts come out of that. We know, at least it's reported, that in 2008 Russia went to a nuclear alert in its operations against Georgia, and in 2014, President Putin said that he had thought about going to a nuclear alert. This is a very different world than we expected, post-cold-war. And so, that's where—that's the line of thinking that leads me to concur that there needs to be a review—a defense review of some sort, the details to be worked out, because the world has changed in a major way. And so, how we've looked at these things over the last two decades also needs to change.

Senator SESSIONS. Well, thank you. I know others would like to comment, but I'll turn to Senator Donnelly. I would note your comments in your opening remarks about the very technical nature of their tactical weapons evidences a serious contemplation that they might be used. Would you agree with that?

Dr. PAYNE. Yes, sir. The open Russian press from senior Russian officials and scientists suggest exactly that. In fact, in an important case, Victor Mikhailov has said—it was a—he was head of the Sarov—was—at the time, was the head of the Sarov Institute—said that the Russians were working—making great progress on a nuclear scalpel that could be used in a conventional conflict. As we understand, the idea is that a nuclear scalpel could be used that would be at such a level that the West would not respond, because it would be essentially deterred from responding at a nuclear level, and therefore, the West would essentially back down. I mean, that appears to be at least part of the Russian thinking, and it's—it goes by the name of "to escalate to de-escalate a conflict." In other words, escalate to nuclear use, and that de-escalates the conflict. It de-escalates a conflict because the West backs down. That's the notion of what's being discussed, openly.

Senator SESSIONS. That's a grim reality.

Senator Donnelly?

Senator DONNELLY. Thank you very much, Mr. Chairman.

You can't always determine what another person thinks. You can influence it one way or another, but you can't think for them. I'm curious, just as a starter, Do any of you believe that NATO would not fulfill—NATO countries would not fulfill their treaty obligations to another NATO country if they were attacked? Do any of you believe we would not?

Dr. ROBERTS. No.

Senator DONNELLY. Do any of you believe that the Russians think we would not respond?

Mr. MILLER. I believe that there are reasons that they could convince themselves, however wrongly, that we would not respond. And that is my concern, sir.

Senator DONNELLY. And you can send signals, but you can't, on your own, determine what another person thinks or how they're going to behave as they move forward. Let me ask you this, to all of you. The ruble is worth 82, 83, somewhere between 80 and 85—the last week, 85 rubles to a dollar, based primarily on oil, their

economy. As their economy grows into deeper trouble, do you think that makes Russia more dangerous or less dangerous on this front?

Dr. PAYNE. I think it has both effects, or it has potentially both effects. In other words, what the Russians have been—President Putin, in particular, has been saying about the reduced economic resources is that Russia would continue to make the military the first priority, and, in that context, nuclear weapons the highest priority within the defense establishment.

That said, if the resources dwindle as much as it looks like they might, the question is, To what extent can they actually maintain that? The Russians seem to suggest that they're going to maintain it. Whether they will or not, I think, is an open question. And that may make them more dangerous, not less dangerous.

Senator DONNELLY. And then I guess the followup question to that is, As you look at this, how much of what you're hearing from them is being driven by their economic conditions, the things they're struggling through, that they have to have something to talk about, something to lead forward with?

Mr. MILLER. Sir, I'd say that what we saw, starting about 6 to 8 years ago, was President Putin changing the nature of the Russian political system, even when they were riding high, economically. And so, the emphasis on nationalism, the emphasis on being surrounded by foreign forces, the elimination of political opposition at home is part of the picture, whether they're making money or not.

I think, to your prior question, it's always a concern that—Russian history shows that, when regimes are having some problems at home, they start to focus people's attention abroad and to stir up nationalism.

All that said, I don't believe we're in any serious circumstance of having Russia reach out and grab one of our NATO allies. Now, I'm not sure what would happen in a crisis, when he thought that was his least worst option.

Senator DONNELLY. When you look at this on a continuing basis—one of the things we've heard in the past is that, some years ago, when it was clear that Russia—if there was a ground action in that area, Russia had—would have—had a stronger presence than NATO would. Now you look, and we've heard that NATO on the ground would have a much stronger presence. You don't think so.

Mr. MILLER. No, sir. Again, if you look, geographically, at the combination of ground forces in the Baltic region, the Russian forces are much stronger. The Secretary of Defense has taken great steps to improve our own capabilities, deploying smaller numbers of U.S. forces, but the conventional balance on the Russo-Baltic border is clearly——

Senator DONNELLY. Well, how far do they go before it matches up?

Mr. MILLER. NATO?

Senator DONNELLY. Yeah, before NATO forces and Russian forces——

Mr. MILLER. Tens of thousands of forces, sir, that we're not——

Senator DONNELLY. No, no, I'm sorry. What I mean is, on the ground, how far would they have to go before it becomes an even fight? Like heading over—in toward Europe?

Dr. HARVEY. We have to reinforce, and then we can win the war, but it takes us time to reinforce.

Senator DONNELLY. But, with the reinforcements on the ground, we have the advantage, at that point.

Dr. ROBERTS. We do not. We do not—we have—the current NATO conventional force structure cannot be deployed in any kind of timely fashion to redress a Russian invasion. The reinforcements would have to come from across the Atlantic.

Senator DONNELLY. So, you don't think that any of their talks in regards to nuclear weapons is related to shifting forces on the ground and shifting advantage on the ground.

Mr. MILLER. Well, the concern would be if—if they achieved a quick, limited tactical victory and we began to reinforce, that the threat would then come—if we didn't stop our reinforcements and simply leave the situation in the status quo, then they would escalate to de-escalate and use nuclear weapons. That's where the Russian strategy leads you.

Dr. PAYNE. Can I mention that President Putin has said that he can have Russian troops in five NATO capitals in two days? I don't know whether Russia plans to do that, but if President Putin believes that, that can be the type of mistake that—that Frank mentioned—that could lead to, you know, a disaster, even though we, on our side, believe that it would be disastrous for them to move in that direction.

Senator DONNELLY. Thank you very much.

Senator SESSIONS. On the China border, is the opposite the case, where the Russians are less able to resist the—a Chinese advance, and therefore, they would even be more committed to a scalpel or a nuclear weapon?

Mr. Miller?

Mr. MILLER. Yes, sir.

Senator SESSIONS. Let's see. Senator Fischer?

Senator FISCHER. Thank you, Mr. Chairman.

Senator SESSIONS. Thank you. I heard your—I heard Omaha being mentioned on the football game the other day a lot.

Senator FISCHER. I know. We always make the news. Nebraska's always the leader.

[Laughter.]

Senator SESSIONS. Your Mr. Manning——

Senator FISCHER. Thank you.

Senator SESSIONS.—quarterback Manning——

Senator FISCHER. I know. Peyton Manning——

Senator SESSIONS.—keeps calling your name.

Senator FISCHER. He was——

Senator SESSIONS. I've thought about you.

Senator FISCHER. He was just the best. That helped him—and that helped him to win, when he yells out "Omaha."

Dr. Harvey, in your earlier statement, you referenced then-President Bush, in 1991, in some actions that he had taken. At that time, he unilaterally eliminated, I think, almost all the deployed tactical weapons—tactical nuclear weapons that we had. Did he ex-

pect the Russians to follow suit on that? Because they did not. Did he expect that to happen?

Dr. HARVEY. There was, I believe, the expectation—while the—President Bush's—President Bush 1's tactical nuclear reductions were unilateral—that there were be some reciprocity. There was some reciprocity, but some of the Russian promises on reciprocity have not been fulfilled.

Mr. MILLER. Senator——

Senator FISCHER. And as we look at our—as——

Mr. MILLER. Senator, I was one of the architects of that. Yes, the—President Bush made a speech, in late September 1991, where he announced what we were going to do, and it specifically challenged the Russian leadership to do the same thing. President Gorbachev, in 1991, and President Yeltsin, in 1992, committed themselves to do virtually everything that President Bush announced for our forces. But, as Dr. Harvey indicated, they—and you've said—they failed to carry out their pledge.

Senator FISCHER. And today, we're faced with the tactical nuclear weapons that the Russians have. And I think that line is blurring between the tactical nuclear weapons and the strategic nuclear weapons. How do you feel that we're going to be impacted by that, especially with the Russians making a number of advancements with their tactical nuclear weapons? How does—how's that going to affect our nuclear posture in the future? If you would all like to address, specifically, the Russians, but also dealing with other nuclear powers that we are looking at in his world, whether it's the Chinese or North Korea, or looking down the road in the future to even Iran. How's that going to affect our deterrence?

Dr. ROBERTS. So, let me start, if I may, with the Russia piece. So, NATO's nuclear posture consists of two main elements: the independent nuclear forces of the three nuclear allies within the alliance; and the nuclear sharing arrangements, which have steadily come down, and we can say at the unclassified level, to 97 percent from their Cold War height, the number of deployed weapons by the United States in support of the nuclear assuring arrangements. So, the question for NATO is how to adopt that posture to the new situation presented by Russia and to its new capabilities.

The key development in Russian military doctrine is this elaboration of the escalate-to-de-escalate strategy and the footnote to that, which is, they recognize that that may not be effective in achieving the result they would like, so they've introduced a vocabulary now about pre-nuclear deterrence, the use of long-range non-nuclear strike systems, whether cruise missiles or ballistic missiles, that would be used to escalate a conflict in order to de-escalate it, but below the nuclear threshold. We need to strip away their confidence that those threats are going to be effective in inducing NATO's restraint. We can do that with a little bit of missile defense, a little bit of non-nuclear strike of our own, and an ability to retaliate if they conduct limited nuclear strikes, which we have with our DCA arrangements, and an ability to escalate if they continue with nuclear strikes, which we have with our strategic national assets of the three countries.

So, this is—I don't see the Russians solving a significant military problem for themselves by producing low-yield nuclear weapons. If

they use nuclear weapons, they will have crossed a dramatic threshold. And the fact that they have certain yields and certain downrange hazards will not be terribly impressing upon the alliance of the need to do something decisive in response to impress upon Russia the degree of its miscalculation.

Now, the key wildcard here is where they go with INF [Intermediate-Range Nuclear Forces Treaty]. If they—if their violation of the treaty proceeds now to the deployment of some significant force of intermediate-range nuclear weapons, then I think the problem for the NATO alliance becomes more complex. And in that circumstance, I am not sure that the existing DCA arrangements would be adequate to signal the resolve of the alliance, when threatened.

So, with that, I'll set us—turn to others for the additional comments.

Dr. PAYNE. I'll be happy to comment.

Senator FISCHER. Dr. Payne.

Dr. PAYNE. And that is—it—the question isn't just how the Russian nuclear weapons impact what we may or may not do; it's how the Russian combined arms, conventional and nuclear weapons, impact what we may or may not do. And let me just give you an example. Defense Minister Shoygu just announced that Russia was going to establish three new divisions in the western district opposite NATO with permanent basing and that Russia was going to move the S–400 to Kaliningrad. What this suggests is a very serious buildup of conventional capability in the western districts. We shouldn't be surprised by that, I guess, given what they're saying, but it's actually happening.

So, you know, what does that mean? It means that NATO needs to be able to prevent conventional fait accompli by Russia, because we can't allow President Putin or the Russian elite to believe that they can have Russian troops in five NATO capitals in two days. And that's——

Senator FISCHER. They've—but, they've shown to us that they can move their forces quickly.

Dr. PAYNE. That's true. And that's—and so, what I'm suggesting is, this is something that NATO needs to respond to. We need to make sure that Russian cannot——

Senator FISCHER. But, do we——

Dr. PAYNE.—produce these fait accompli——

Senator FISCHER.—do we respond with a—nuclear deterrents? That's—you know, that's my question.

Dr. PAYNE. Right.

Senator FISCHER. What is our posture going to be, going forward, with regards to deterrence when you're—not just the conventional weapons that they have, but also—and not just Russia—but with their tactical?

Dr. PAYNE. Yes, Senator Fischer. I think it's a two-pronged approach. We have to be able to deter the conventional assault—the Russian troops in five NATO capitals in 2 days. And helping to counter that vision of the Russians is important. And conventional forces are necessary for that; not just on a rotational basis, but having conventional forces that can help prevent that will help deter that. We also need to be able to deter the nuclear escalation

threat. So, we need to be able to do both. And that's where I believe there is a role for NATO and U.S. nuclear weapons to deter that notion that nuclear escalation will save the day for them.

Now, what does that mean for us when you look at the basics? Where does the rubber meet the road? It means that we can't remove the DCA from Europe. That would be ridiculous at this point. But, there have been many, many suggestions that the United States DCA should be removed from Europe. We should go ahead. We must go ahead with the B61–12 for the DCA. We need to maintain our deterrent that can help prevent the Russians from thinking they can nuclear escalate their way out of a problem that they create by trying to put Russia troops in five NATO capitals in 2 days. So, it's a two-pronged deterrence approach.

Mr. MILLER. Could I just be—very brief, say—we have two problems. One, Putin's rebuilt Russia's nuclear and conventional forces. And two, he's shown a propensity to use those conventional forces in Georgia and Ukraine when he thought there was low risk. Our job, as the United States, and our job, as to NATO, is to say to him, "There is an extreme risk in using those forces of any kind against the alliance." And that means building up some conventional capability in Europe, and it means retaining a good, credible nuclear deterrent, which means modernizing our forces. If he is convinced there will be cost to potential aggression, he's not going there. But, at no cost, he could.

Senator FISCHER. Will it take the United States to be the leader on that, to bring in all of the NATO partners that we have so that they understand the importance of having a line of defense with Russia? They have a big border now to protect——

Mr. MILLER. We are the——

Senator FISCHER.—whether it's in the south, and the issues they face there, but—how do you convince, I think, especially Western European countries of the importance of having that firm border on the east?

Mr. MILLER. We are the leaders of the alliance. Without us, there is no NATO alliance. And it makes hard work. I chaired NATO's Nuclear Policy Committee for 4 years. You can do that. You can bring those countries along. But, it takes hard work. Brad knows that. My other colleagues know that, as well. We have to lead, and we have to be prepared to take that burden on.

Senator FISCHER. And, Mr. Chairman, I am way over my time, but can I have Dr. Harvey respond?

Senator SESSIONS. Important.

Senator FISCHER. Since I used your name at the beginning, sir.

Dr. HARVEY. I think it's important that we recall that, back in the 1950s and the 1960s, when Russia had a massive conventional strength on the western—on the—confronting the western alliance, that we declared that we would use nuclear weapons first to repel conventional aggression. We want to get beyond that. We need to have our capabilities in place to deter conventional attack with conventional forces. And that involves, very likely, restoring some military capability from the United States to the alliance, and figuring out ways to exploit technology better, via offset strategies, et cetera, to be able to achieve military objectives, not necessarily

with stationing massive armored divisions forward, but with technology.

Senator FISCHER. Thank you.

Thank you, Mr. Chairman.

Senator SESSIONS. Thank you.

Senator King?

Senator KING. Thank you, Mr. Chairman.

It seems to me there's a real dilemma at the core of this discussion, and that is, How do we increase our deterrence in Europe with a NATO deterrent without at the same time feeding Putin's paranoia about aggression from the West? There's a kind of—it's not really chicken-and-egg; I think it's a downward spiral, it seems to me.

Mr. Miller, would you comment on that? Because clearly part of what motivates Putin is a 500-year-old Russian belief that the West is out to get them.

Mr. MILLER. I think he is motivated by that, Senator King, but I also think that he and his military experts are quite aware of what our capabilities are and are not. The movement of a United States Brigade Combat Team to the Baltics, and actually parceled out among those countries, is clearly not an offensive threat. I don't—I think he and his military are quite clear that NATO cannot, and does not, present an offensive threat to Russia. But, as you say, it feeds the paranoia, and it helps him in his general political approach to dominance and eliminating opposition in Russia.

Senator KING. How much of this new-found Russian aggressiveness, if you will, is Putin himself, as an individual, and how much is Russian doctrinal structural thinking?

Dr. Harvey, you want to take a crack at that?

I realize—we spend a lot of time around here psychoanalyzing Mr. Putin, so we may as well do it a bit more.

Dr. HARVEY. If my wife were here, who—she is a Russia specialist. She's a—an expert on the Putin stuff. But, I'm going to turn this over to Keith. I think he can handle this one better.

Dr. PAYNE. Thanks, John.

We make a mistake if we personalize this to President Putin——

Senator KING. Right.

Dr. PAYNE.—because most of what we hear and see, and the kind of things that the—come out in the—particularly the open press with regard to the topic that we've been discussing today go back to 1999–2000. We see military leaders making statements that are, as I said earlier in my prepared remarks, preemptive use of nuclear weapons in conventional conflict. So, it's much more of a culture and a regime position than it is narrowly personalized President Putin. My strong belief is, if President Putin for some reason were no longer on the scene——

Senator KING. We'd still be dealing with this.

Dr. PAYNE.—we'd still be dealing with this, yes, sir.

Senator KING. That's important. That was the thrust of my question.

Let me change the subject entirely, because we've been talking about Russia most of the time. Very specific question, briefly. How vulnerable are we, in terms of command and control, to cyberattack? We can have all the weapons in the world, but if we

can't communicate because of a—some—a cyberattack of some nature—and, to the extent, in an unclassified setting, you can share your thoughts.

Dr. HARVEY. I spent quite a bit of time worrying about this when I was working with Ash and others in the Department of Defense. Before he became Secretary and Deputy Secretary, he led a crusade within the Department to strengthen the command and control of nuclear forces. One of the key elements of the command and control of nuclear force is ensuring a cyber integrity of the system. We have an old system.

Senator KING. That may be good.

Dr. HARVEY. That may be good, to some degree. We're thinking of—we have to modernize it. Part of Ash's initiatives was to introduce a complete comprehensive, ongoing cyber assessment of the command-and-control system. And we're starting off with the ICBM force, and we're moving through the whole system. I am not currently current with that cyber vulnerability assessment. But, it's something I worry quite a bit about. And it's important that we devote the right attention to ensuring that we can get a conference set up with the President, we aren't fooled into believing that the attack is underway, when it really isn't—when it isn't—or that it isn't underway when it really is. We need to ensure that we can communicate with our forces, and that no one can disrupt those communications.

Senator KING. Well, I'm glad to know that work is ongoing, and I hope it has a sense of urgency.

Mr.—Dr. Roberts.

Dr. ROBERTS. I had a comment on that. We have a command-and-control system tailored for the problem of the 1960s and——

Senator KING. That's reassuring.

Dr. ROBERTS.—which is essentially—in plain speak, it enables the President to take a 5-minute multiple-choice quiz and then skedaddle, which fit a world in which we worried seriously about the possibility of a major bolt-out-of-the-blue Soviet strike.

If that's the path—if that's no longer the pathway to nuclear war, what might be? Well, the case that concerns all of us around the table, I think, is regional aggression, a regional conflict, where the adversary tries to escalate its way out of a failed act. And thus, the first decision the United States encounters about employing a nuclear weapon isn't in the bolt-out-of-the-blue context. And, if you will, if the system is geared to enable the President to take a multiple-choice quiz in 5 minutes, what he needs to be able to do is to take—pass the essay test. Imagine a Korean contingency in which North Korea has crossed a red line of ours. We face a decision about whether and how to respond with a nuclear weapon. Who's the President going to want to talk to? And—many, many, many people.

Senator KING. Right.

Dr. ROBERTS. And is the system geared to do that? Well, that's not quite the nuclear command and control system, but it's a part of the new landscape we're in. And moreover, if we're entering the phase of nuclear decision after some period of prolonged conventional regional war, we can expect that cyber and space assets both would already have been under attack. And thus, we might be en-

tering the nuclear phase of a conflict with a weaker command-and-control system than has been our assumption when we think that the problem is the bolt-out-of-the-blue.

So, there's an excellent question about the cyber vulnerability of the command-and-control system, but there's a related question about whether the system, as it was conceived and constructed for the problem of the past, how it needs to evolve to be effective for the problem that's emerging in front of us.

Senator SESSIONS. Senator——

Senator KING. Mr. Chairman, may I follow up with one additional question?

Mr. MILLER. And you've got—could I just say—command and control, while vital, has always been an afterthought. We have to modernize the triad and OES——

Senator KING. Right.

Mr. MILLER.—nuclear command and control, too. I would recommend to the committee that it engage in looking at that over the next year. This is a critical element of our—it is the most critical element of our force structure.

Senator SESSIONS. The command and control——

Mr. MILLER. Yes, sir. Nuclear command and control.

Senator KING. I wanted to ask one additional question. It may be that you could answer very briefly and give us some thoughts on the record.

Again, to change the subject utterly. We've been talking about Russia, then we've been talking about escalation, North Korea. What about terrorists? How—deterrence doesn't work against a suicidal nonstate actor. The whole theory just breaks down. Do we need a—I mean, how do we deal with that? We've—deterrence has been very effective, a tremendously effective doctrine for 70 years, but now we're in an entirely different situation, where if somebody doesn't care about dying and they don't represent a country—how do—what's the strategic doctrine that deals with that threat?

Dr. HARVEY. I would make one point. First of all, we can deter the sale or transfer of nuclear weapons from states to terrorists by making it clear to states that we hold them accountable for those transfers; and, two, that we have the capabilities to know whose nuclear weapon just went off and where it came from. And that's an important critical aspect of deterrence in the concept of terrorism.

Senator KING. Is that a well-known concept in the world today? People—other countries know that that's our——

Dr. HARVEY. We have fairly robust nuclear forensics capabilities to be able to determine, if we acquire a nuclear weapon from a—that—where it came from, and, number two, if one goes off, also be able to understand, through debris analysis, where it came from. And that's pretty well understood. I think the point of—once the terrorists get the bomb, yeah, you're right, they're going to want to use it, and they're not going to care if they give up their lives to use it. And our job has to be able to create barriers and delay mechanisms to convince them they will not be able to achieve their objective, which is to kill a lot of Americans or a lot of allies.

Senator SESSIONS. Senator Cotton, thank you for joining us.

Senator COTTON. Well, thank you for the invitation. I don't sit on the subcommittee, but I believe that, while there may be more immediate threats to our national security, there's no more fundamental issue for the safety and security of the American people than our nuclear forces.

I'm occasionally asked by those on the left, as well as—who pose nuclear weapons—and those on the right, who look for places to trim spending, "Why do we spend so much on weapons we never use?" My answer, first, "On the contrary, we use our nuclear weapons every single day." And, second, "We actually don't spend that much on our nuclear weapons." I think it's less than 5 percent now of the total defense budget. That is a very valuable investment.

To that end, when was the last time the United States designed a nuclear bomb?

Dr. HARVEY. The last full-up nuclear weapons—nuclear warhead that we designed was the W88 SLBM warhead for the Trident ballistic missiles carried on submarines. And that was in the 1980s.

Senator COTTON. When was the last time we built a nuclear warhead—a new nuclear warhead?

Dr. HARVEY. It was the W88, probably—we were producing them through the late 1980s into the early 1990s, when President George Herbert Walker Bush stopped the production.

Senator COTTON. It is the current policy of the United States Government not to develop new nuclear warheads or pursue new military missions for nuclear weapons. Should that remain the policy of the United States?

Dr. HARVEY. That policy should be reviewed in every administration. This administration, early on, made a decision, in light of the difficult efforts underway to sustain the existing stockpile, not to go off and develop new warheads or new—new nuclear warheads and for nonproliferation objectives. It was not a decision, for all time, not to consider the possibility of having new or different military capabilities in the force. And every Nuclear Posture Review should revisit that decision. Indeed, all Presidents, including this one, has said we need to maintain the capabilities to ensure that we can develop new or different warheads for providing different military capabilities, if required from an evolving security environment.

Senator COTTON. Mr. Miller, I saw you nodding your head?

Mr. MILLER. Senator, I—I was not in the administration, was not a part of this administration, but the intent of that policy, as I understand it, as the intent of the Prague speech, was to set an example for others not to either rely more on nuclear weapons or build new nuclear weapons. The French, the Russians, the Chinese, the Indians, the Pakistanis, and the North Koreans are building new nuclear weapons. If the intent of our policy of self-restraint was to stop them from doing so, that policy has failed. To the degree that our stockpile requires new capabilities, then I think we ought to examine that.

Senator COTTON. Let's move from warheads and general policy to delivery systems and immediate policy. I have seen several reports, both in the media and in conversations, that the long-range standoff cruise missile may not be fully funded in the President's upcom-

ing budget request. Senior civilian and military DOD officials insist that this is absolutely necessary.

Mr. Miller, would you like to explain why they have reached that conclusion?

Mr. MILLER. Yes, sir. The bomber leg of our triad consists of 19 B–2 bombers and about 50-odd B–52s. The only way the B–52 is an effective deterrent is by carrying a cruise missile. The cruise missile that it carries now, the AGM–86 ALCM, first entered the force in about 1980–1981. It's got reliability problems. And whereas it was stealthy then, it is no longer stealthy today. So, if you don't have the long-range standoff weapon, you don't have the B–52, and, by extension, you really don't have a triad anymore.

Senator COTTON. Thank you.

Dr. Payne, do you have anything to add on that question?

Dr. PAYNE. I would just add, as a—at a general level, that the more flexible our capabilities are, the more diverse they are, the more likely it is that we'll have what's necessary for deterrence when it becomes extremely important to have an effective deterrent. And so, the continuing reduction and narrowing of our capabilities, I believe, has a adverse effect of narrowing the potential that we will have what's needed for deterrence when that crisis comes. And so, I think that the cruise missile is extremely important, for the reasons that Frank mentioned, but also in general, because we need to retain a flexible, diverse force structure for deterrence purposes.

Senator COTTON. And my time is expired, here, but if I could just conclude, Senator Sessions, with——

Senator SESSIONS. Yeah.

Senator COTTON.—one comment, since you and Senator King had a conversation about Vladimir Putin and his intentions, and divining those intentions.

Operations by Russia began in earnest in Syria in late September. They continued unabated to include several violations of Turkish airspace, 'til Turkey shot down a Russian aircraft in its airspace in late November. To my knowledge, since then, Russia has not had any incursions into Turkish airspace.

What do you think that tells us about Vladimir Putin's response to countries or adversaries that draw a line on his aggressive conduct?

Dr. PAYNE. I think it—what it shows is that Vladimir Putin is a calculating person. He has a chance to be reckless, but, when he sees that being reckless really will have very negative consequences, he can also pull back. That's why, in our discussion today, our goal is to make sure that he doesn't make a mistake and act on some of the more reckless ideas that seem to be part of what that regime is talking about.

Senator COTTON. Well, I would agree with that. And I would add, for the record to that conversation about Russia, that 500 years of Russian history shows that it's actually the West that has more to fear from Russian aggression than Russia from the West. The two main times they've faced a threat from the West, from Napoleon's France and Hitler's Germany, it was the West that united against that invader and on the side of Russia. And if you ask Sweden or Poland or the liberal uprisings of the 19th century where they had

the most fear from, it was from Russia; it was not from anyone in the West.

Senator SESSIONS. Thank you.

Well, Dr. Payne, just follow up a little bit on that and—because we really need to get your opinion on the necessity, or not, of a new nuclear weapon. What I hear you saying is, in this world of calculation by powers, that if Russia or some other nuclear state is calculating that they can take—use a small-yield—some sort of small-yield nuclear weapon, and they calculate we won't retaliate, they are more likely to use that weapon. Is that—first—that's the first question. If they think we won't retaliate, they're more likely to use it than if they are certain we would retaliate.

Dr. PAYNE. If they think that they have license to do that, then they're more likely to move in that direction.

Senator SESSIONS. And if, to follow up, the flexibility you're talking about in—if you only have, you know, a nonsurgical-type response capability, then they might increase their belief that you're not going to—you don't have the right kind of weapon to respond, and might, again, cause them to more—be more willing to use a nuclear weapon. Is that—I guess I'm—you can probably see where I'm going.

Dr. PAYNE. Sure.

Senator SESSIONS. So, the question is——

Senator DONNELLY. And if I could just add to that. And this is—I don't want to go into any classified areas—but, don't we have the ability to work with our weapons to match what they do?

Senator SESSIONS. And so, the question—we'll get there. The deal, to me, is—and we don't talk about it much—but, we must have a realistic ability to respond, and our adversaries need to know it. And we don't—that—and we don't need to be put in a position where we've got to pour troops in, and they be vulnerable to a nuclear attack. There's a—so, how do you evaluate that, in terms of the kind of flexibility we need——

Dr. PAYNE. Right.

Senator SESSIONS.—in our system?

Dr. PAYNE. Yes, sir. I think you have hit the key question. And my basic answer is, we need to fill the gap that the Russians seem to see in our capabilities. What that gap is seems to be at the low end of the spectrum, low-yield nuclear weapons, very accurate nuclear weapons. Now, whether that means we need a new capability, or not—I hate to be an academic, but it depends on how you define "new." If I heard my colleague, Dr. Harvey, talk about "new" as something that would be outside or beyond designs—existing designs. And it may well be that——

Dr. HARVEY. Qualified in nuclear tests.

Dr. PAYNE. Exactly. So, if the designs that we have, qualified via previous nuclear tests, are as broad as I understand them to be, then we may not need new nuclear capabilities. We may need something that's outside of the current stockpile, but it's not a new nuclear capability. But, the first thing we need to do—and this is where I get back to the point that Frank made earlier—is that we need to understand what the Russians are doing and saying, and what their views are, before we deem what we need for deterrence. In other words, we need to understand them first, because what we

have has to impress them. It doesn't just have to impress us; it has to impress them. So, we need to fill a gap we see.

Senator DONNELLY. And isn't one of the other things we need to do to send a clear message, through one way or another, that any use of any weapon is—will clearly be countered immediately the same way?

Dr. ROBERTS. So, easier said than done.

Senator DONNELLY. No, I get that, too. But, I mean——

Dr. ROBERTS. You're passing through the filter of all of their perceptions about the credibility of that threat.

Senator DONNELLY. And it really comes down to a Clint Eastwood moment of, "Do you feel lucky? Do you think we're not going to act?"

Dr. ROBERTS. Right.

Senator DONNELLY. And——

Dr. ROBERTS. And what we——

Senator DONNELLY.—our job is to ensure that they look at the weight of evidence, and the evidence is that we will, I guess.

Dr. ROBERTS. Yes. And that we make it difficult for them to calculate precisely what risk they're going to run. Putin's shown himself to be an astute player of low-stakes poker. He's gone up against us everywhere that our stake hasn't been anywhere near what his stake is. That's low-stakes poker. Going up against NATO would be high-stakes poker. And we need to do everything within our realm to demonstrate our conviction, our, just, belief, that that would be so. I'm not sure that new declaratory policy statements, new threats to Russia, new red lines in the sand would have any impact on a man who's, by and large, made up his mind about our strategic behaviors and our strategic personality. But, to the extent we can expose him to risks that he can't calculate, costs that are higher than he might have expected to pay, and—while at the same time reducing his expected benefits out of threatening and attacking NATO and trying to pull it apart, then we make it more and more difficult for him to convince himself that he can run these risks and win.

So, I think the nuclear tool in the toolkit is fundamental, but it's a much broader toolkit, and it begins with how we convey the role of deterrence in the alliance's overall strategy, and how we convey our intent to defend the vital interests of our allies.

And just to sort of close with a comment on the quotation you had, Senator Sessions, from President Obama in Seoul. What was missing from the quotation, which—was what he then went on to say, which was, "But, we want North Korea to make no mistake that the United States would use nuclear weapons on behalf of South Korea when its vital interests are at risk." That's the message that they need to hear. And they need to hear it from everybody in our political system, not just the Commander in Chief.

Mr. MILLER. If I could, sir, since I'm the one who said we ought to say something in our declaratory policy. Nothing in isolation makes sense. It's a combination of what we say, how we exercise, how we lead in NATO, and how we modernize our forces. Way back in the bad old days, they used to—we used to say, "We know we can't win a nuclear war. Our job is to convince the Soviet leadership that they can't win, either." It's words like that. It's leader-

ship. It's modernization. And it's working with our allies to make clear to everybody that an attack on one is an attack on all, and that it's high stakes.

Senator DONNELLY. It's the entire picture that you paint.

Mr. MILLER. Yes, sir.

Dr. ROBERTS. May I come back to the, "Do we need new?" question?

Senator SESSIONS. Right.

Dr. ROBERTS. Since this is clearly——

Senator SESSIONS. You indicated previously you didn't think so. And so, modernization, you favor. Is that correct, Dr. Roberts?

Dr. ROBERTS. Absolutely.

Senator SESSIONS. All right. So, go ahead.

Dr. ROBERTS. This is a case where the best may be the enemy of the good, which is to say if—if we were to set out today and to define the optimal nuclear arsenal for the security environment we sit in, in 2016, it would probably look somewhat different from the arsenal we have. But, do we know that anything is different politically from the circumstance of the George W. Bush administration, when executive-legislative agreement was not possible on even replacement warheads? I'm worried about the circumstance in which we go off and say, "We're not sure that a new capacity is really going to just solve this problem us, but it seems like it's the right thing to do," and watching the political support for life extension programs evaporate. Then we end up in a worst-possible world.

So, there's a pragmatic political question, here, it seems to me, about whether or not going for new is an attractive option. But, you're not asking the political question, you're asking the military strategic question, "Does this enhance, in a fundamental way, in a—or a significant way, the nuclear toolkit we already have in place?" And I go back to my starting point. Is there a military commander who has said there is some deficiency in our ability to do what's—guidance calls for, which is to put at risk those things that we believe enemy leadership values? It's not simply to destroy enemy societies. It's to do something much more complex. We don't see evidence—I mean, no military leader has come forward and said there is an unmet requirement.

So, the question then is, well, from a deterrence perspective, as opposed to a warfighting perspective, might there be some benefit? And you set out the case, but, if I may observe, with a series of "mights." Putin "might" think we might—he might interpret this, he might think that. It seems logical to us that he ought to be more impressed by the threat to employ a lower-yield weapon than a higher-yield weapon. But, I don't think we should join Mr. Putin in trying to reduce the nuclear threshold to the lowest possible level with the lowest-yield nuclear scalpels. We want it to be clear. Nuclear weapons are brutish. They're meant to be different, "You—if you cross this line, we're not going to mess around with trying to match you, scalpel for scalpel. You've changed the conflict, and you've changed our stake, with crossing the nuclear threshold."

So, I don't see a deterrence rationale that's strong and credible for going for new. There you have it.

Senator SESSIONS. Thank you.

Dr. HARVEY. Could I elaborate on that one point?

Senator SESSIONS. Caused us all to think.

Who else would like to comment on that?

Dr. HARVEY. I'd like to comment on the point that——

Senator SESSIONS. Dr. Harvey.

Dr. HARVEY.—Senator Donnelly made. And I—it reinforces, I think, Frank's comment—is that—I personally am not optimistic that a—that you can manage escalation once nuclear weapons are used. That's my view. And I believe that's our—that's the view of many in the United States. I'm not sure that's Mr. Putin's view. And that's the question. How do I convince him that he—he may think he can manage escalation. So, what do I need to do to convince him that he—that should introduce doubt in his mind about that? And what that means to me is, we've got to think about that, and that's what—exactly what the next Nuclear Posture Review—and we shouldn't necessarily foreclose any option until we understand what we think we need.

Senator SESSIONS. Dr. Payne—and before we get into it, I would just say: Carrying through on a thorough effective modernization would be a modest step in that direction, would it not, Dr. Roberts?

Dr. ROBERTS. More than modest, I think.

Senator SESSIONS. Dr. Payne?

Dr. PAYNE. I just want to add that I agree with Brad's point—I think we all do—that we don't want to mimic what the Russians are doing for the sake of mimicking the Russians. I don't know that there's any value in that at all. The question is, what do we need to do to shut down the Russian strategy? Because that we do need to do, and we all agree that we need to shut down this Russian strategy. And so, the question isn't mimicking the Russians; it's, Is there a gap that we can fill that will contribute to shutting down the Russian strategy? You know, I don't know that something new is necessary to do that, if we define "new" the way Dr. Harvey rightly, I think, defined it. I don't know that something new is necessary for that. At the same time, I don't think we should come in and, a priori, say we're not going to do anything new. I mean, we should be able to take a good look, and try and understand, What is it that the Russians are doing? What's their strategy based on? And what does it take to fill whatever gap they see, when we understand what that gap is? And we're just at the nursery slopes of doing that, frankly.

Senator SESSIONS. Senator King?

Senator KING. I would argue, taking off from that point, is that the development of the new standoff cruise missile isn't new. It's simply a making the—that arm of the triad effective, based upon current realities. You all would agree?

[All three witnesses nodded in agreement.]

Senator KING. Okay.

Again, change the subject a bit. It appears that the Russians violated the INF Treaty. Is the INF Treaty still in our best interests? Should we move on beyond it? Should we take their—should—how do we respond? And do we respond possibly by simply saying we're no longer going to abide by it, either?

Mr. MILLER. I think that this—we're right back into, "We don't want to mimic what the Russians are doing." The Treaty is of value if the Russians—if the Russians abide by it. They've broken the

Treaty. We need to work to try to get them back into compliance with it. But, on the assumption that they don't, then we ought not maintain the fiction that the Treaty, in fact, is governing both sides, that it's a—they've made it a dead letter. That said, given that introducing new groundbased weapons into NATO is always a neuralgic issue, has been from the very beginning of the alliance, I would not try to match what the Russians are doing with a similar kind of weapon system. I'd try to use our intelligence and our brains to figure out a new way of offsetting that capability, should we decide that's necessary for deterrence. And my own inclination would be to go back to some sort of a submarine-launched cruise missile.

Senator KING. Dr. Roberts?

Dr. ROBERTS. Recalling my case, in my opening statement, about the importance of Asia to this discussion, if we had the opportunity to produce intermediate-range, conventionally-armed ballistic missiles, this would be a useful response to China's anti-access area denial strategies, and a—an important tool in the assurance of our allies, and also avoiding a potential difficulty among our allies as South Korea pursues theater-range ballistic conventionally-armed missiles of its own, thus inciting some Japanese interest in the same.

So, if the INF Treaty were to no longer be binding on the United States, there might be certain advantages to derive for our interests in the Asian security environment.

Senator KING. Thank you, Mr. Chairman. This has been a very valuable hearing. I appreciate you.

Senator SESSIONS. We're lucky to have such a wise panel.

Senator Donnelly, anything further?

Senator DONNELLY. No. Their wisdom has exceeded my ability to absorb it.

[Laughter.]

Senator SESSIONS. That is a ditto here.

Thank you all for your comments. And I think we've all gotten a sense of—we need to get this right. We don't need to blunder in short-term thinking and make some errors that might have ripple effects that we don't foresee today.

Thank you all.

We are adjourned.

[Whereupon, at 4:18 p.m., the hearing was adjourned.]

○